Investigation and Evaluation of Communication on Transboundary Animal Diseases in Selected Countries in the Greater Mekong Subregion

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I declare that this thesis is my own account of my research and contains as its main content work which has not previously been submitted for a degree at any tertiary education institution.

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To Loriedel, Nique, Nira and Nel

ABSTRACT

Communication has long been used in animal health; however, the emergence of zoonotic diseases such as Highly Pathogenic Avian Influenza (HPAI) has increased recognition of its value in assisting control of transboundary animal diseases (TADs). A number of studies have confirmed that there are gaps in communicating animal health issues, especially in Southeast Asia. This thesis aims to investigate and evaluate communication about TADs in selected Greater Mekong Subregion (GMS), specifically in Cambodia, Lao PDR and Vietnam.

The study is divided into phases and involves scholarly research, fieldwork, and analysis and evaluation. It uses quantitative and qualitative approaches in the investigation. Particularly the literature was reviewed; a survey, interviews, focus group discussions and transect walks were conducted in the investigation and evaluation. The first phase (literature review and knowledge, attitudes and practices survey) aims to provide a background to the study. The second phase comprises exploratory fieldwork, which aims to test the qualitative tools. The third phase aims to evaluate animal health communication campaigns for Foot and Mouth Disease (FMD) and HPAI, as well as the communication roles of village animal health workers (VAHWs).

The study shows that there are varying levels of awareness and knowledge of managing TADs such as FMD and HPAI among stakeholders. It finds that a number of factors affect animal health communication including motivation among study participants (such as farmers, traders, VAHWs and animal health officers); the nature of the disease; government/external funding; and communication strategies.

There is no template for successfully communicating in the area of animal health. However, the thesis argues that developing animal health communicative approaches, strategies and practices based on the perceptions and attitudes of grassroots stakeholders framed by an informed and continually updated contextualised understanding of their animal husbandry practices in selected GMS countries would assist in devising targeted and effective communication strategies in the region or in individual countries.

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ABBREVIATIONS

AB-CRC	Australian Biosecurity Centre for Research Cooperation for Emerging Infectious Diseases
ACIAR	Australian Centre for International Agricultural Research
ADB	Asian Development Bank
AHC	Animal Health Communication
ASEAN	Association of Southeast Asian Nations
AusAID	Australian Agency for International Development
AVSF	*Agronome Veterinaire Sans Frontiere*
BSE	Bovine Spongiform Encephalopathy
CAHW	Commune Animal Health Worker
CARE	Cooperative for Assistance and Relief Everywhere, Inc.
ComDev	Communication for Development
CPPE	Comprehensive Participatory Planning and Evaluation
CSF	Classical Swine Fever; commonly known as Hog Cholera
DAH	Department of Animal Health
DAPH	Department of Animal Production and Health
DevCom	Development Communication
DLF	Department of Livestock and Fisheries
ECTAD	Emergency Centre for Transboundary Animal Disease
FAO	Food and Agriculture Organization of the United Nations
FGD	Focus Group Discussion
FMD	Foot and Mouth Disease
GDP	Gross Domestic Product
GMS	Greater Mekong Subregion
HPAI	Highly Pathogenic Avian Influenza; also known as bird flu or avian flu
HS	Haemorrhagic Septicaemia

KAP	Knowledge, Attitudes and Practices
LMS	Lower Mekong Subregion
LMZ	Lower Mekong Zone
MLF	Ministry of Livestock and Fisheries
NaVRI	National Veterinary Research Institute
ND	Newcastle disease
NGO	Non-Government Organization
OIE	World Organization for Animal Health or *Office International Des Epizooties*
OWOH™	One World, One Health™
PCSD	Participatory Communication Strategy Design
PDR	People's Democratic Republic
PHC	Public Health Communication
PMT	Protection Motivation Theory
PR	People's Republic
PCSD	Participatory Communication Strategy Design
PRCA	Participatory Rural Communication Appraisal
PRRS	Porcine Reproductive and Respiratory Syndrome
PSC	Project Steering Committee
RCU	Regional Cooperation Unit
SARS	Severe Acquired Respiratory Syndrome
SEACFMD	Southeast Asia and China Foot and Mouth Disease
TADs	Transboundary Animal Diseases
UMS	Upper Mekong Subregion
UMZ	Upper Mekong Zone
UN	United Nations
UNICEF	United Nations' Children's Fund
US	United States
USA	United States of America

USAID	United States Agency for International Development
USDHHS	US Department of Health and Human Services
VAHW	Village Animal Health Worker
VVW	Village Veterinary Worker
WHO	World Health Organization

GLOSSARY

Attitude	Pertains to opinions of study participants regarding communication messages.
Awareness	The state of recognising a message or an idea from communication campaigns.
Awareness Level	The measure of a participant's correct answer to questions regarding transboundary animal diseases.
Commune	A group of about 34 villages or 126 households. Vietnam considers this as the smallest unit of the local government.
Communication	Refers to the process of engaging people or community to arrive at a mutual understanding.
Communications	Refers to the strategy implemented to communicate, this can be technological or alternative media.
Endemic	Naturally occurring in a particular place.
Epidemic	A disease that affects a great number of people.
Epizootic	A disease that can spread quickly.
Gatekeeper	A person who can influence the opinion in a community.
Knowledge	In the context of this research, was regarded as the application of information or things that the study participants were *aware* of.
Knowledge Level	The measure of participant's correct/expected application of his understanding.
Outbreak	The occurrence of one or more cases of a disease or an infection in an epidemiological unit.
Social Network	A person's circle of friends that may include friends, trading partners, village neighbours.
Social Network Approach	Training of one key gatekeeper to train other community

leaders or grassroots stakeholders on any certain advocacy issues.

PUBLICATIONS/AWARDS/PRESENTATIONS RELATED TO THE THESIS

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CHAPTER ONE
INTRODUCTION

Effective communication has been proven to be pivotal to the success of development projects (Anyaegbunam et al., 2004; Kwame Boafo, 1985; Mefalopulos, 2008; Quebral, 2006; Servaes, 2008). However, communication for development continues to be used inefficiently in most cases (Anyaegbunam et al., 2004; Bessette, 2004a; Colle, 2008; Inagaki, 2007; Servaes, 2008; S. Waisbord, 2001; Wilkins et al., 2001). The ineffective use of communication for development often happens in the animal health sector specifically in the campaign against transboundary animal diseases (TADs) and because of this, there is a need to investigate and evaluate communication about TADs to find better approaches to communicating animal health issues.

In the broad field of agriculture and animal husbandry, communication began to evolve from the field of agricultural extension (Manyozo, 2006, p. 1; Quebral, 2006) and was first conceptualised as a one-way process from a sender with a message that was sent through a channel to a receiver (Berlo, 1960). In the same way, agricultural extension was a one-way process of education from the extension officer or researcher to the grassroots stakeholders. The main aim of agricultural extension was to transfer knowledge of technology to the grassroots stakeholders (Jones and Garforth, 1997). There were efforts to engage livestock stakeholders but most of them failed or were deemed ineffective or in need of improvement (R. G. Alders and Bagnol, 2007; Caro, 2006; Hickler, 2007).

1.1 BACKGROUND

I detail in this research the results of my investigation and evaluation of communication about TADs in selected Greater Mekong Subregion (GMS) countries. Results from my research will provide a basis for improving communication about TADs in the future. I will describe the practice of animal health communication (AHC) in the GMS, specifically in Cambodia, Lao

People's Democratic Republic (PDR) and Vietnam from the perspective of various stakeholders. The understanding of stakeholders' perceptions and experiences gained through this study will inform improved practices for AHC. The aim of this research is to investigate how key stakeholders in the selected GMS countries understand and practise communication in animal health programmes, particularly at the village level. Such a greater understanding will enable animal health managers to "engage with communication problems and practices in the social world" (Craig, 2007, p. ix) and may assist in improving animal health. The three countries mentioned represent low-income earning countries in Southeast Asia (World Bank, 2010a, 2010b, 2010c) although Vietnam is classified as a lower middle-income economy (World Bank, 2010c). Vietnam has the highest gross national income followed by Lao PDR and Cambodia, respectively. In this study, the effectiveness of communication campaigns about Foot and Mouth Disease (FMD) and Highly Pathogenic Avian Influenza (HPAI) in the selected GMS countries will be evaluated using selected qualitative tools. I will discuss below the importance of this research by highlighting the role of the livestock industry in the GMS and then detail from the reviewed literature how AHC has evolved.

Livestock play a significant role in the livelihood of smallholder farmers in the GMS, where a third of the population live below the poverty line[1] (Siddiq, 2004). Farmers rely on livestock for draught power for agricultural activities, nutritious food for their family and cash income from the sale of livestock products such as milk, meat and eggs. Some farmers trade their live animals whenever they are in desperate financial need. The Asian Development Bank (ADB) (Siddiq, 2004) estimates that livestock represents around 15% of the agricultural domestic product in Southeast Asia (SEA) while cross-border trade of livestock within the GMS is valued at around US$365 million.

The demand for livestock and livestock products is projected to "increase by 3.5% to 4.0% annually to the year 2020" (C. Delgado et al., 1999; C. L. Delgado et al., 2001; Siddiq, 2004, p.

[1] The World Bank suggested that "a poverty line of US$1.25-a-day per person was 'representative' of the national poverty lines." People earning $2-a-day are said to be moderately poor. (Bauer et al., 2008, p. 1).

1). International organisations are optimistic that if the livestock growth projections become a reality, then livestock production has the potential to contribute to poverty alleviation (C. L. Delgado et al., 2001; FAO and OIE, 2004; Siddiq, 2004). The number of smallholder farmers around the globe is also expected to grow (Baggott and Smolak, 2010). Despite the advances in technologies in agricultural and livestock production, the increase in smallholder farmers and the decrease in farm sizes pose a challenge to animal health authorities as TADs continue to be discovered, emerge or become endemic especially in the GMS (Ameur, 1994 ; Jones and Garforth, 1997). The limited resources available in small farms, especially in the GMS, make the establishment of biosecurity measures an added burden and cost to smallholder farmers; thus, the threat of TADs is very high. Major TADs such as HPAI, FMD and Classical Swine Fever (CSF) continue to cause severe morbidity and mortality in livestock populations in the GMS, particularly in smallholder communities. TADs are defined as "those that are [of] significant economic, trade and/or food security importance for a considerable number of countries; which can easily spread to other countries and reach epidemic proportions; and where control/management, including exclusion, requires cooperation between several countries" (Otte et al., 2004, p. 6; FAO as cited in Rossiter and Al Hammadi, 2009, p. 999). The World Organization for Animal Health (OIE) treats CSF, FMD, and HPAI as priority diseases (see Box 1.1 for more details). Animal diseases can affect a number of sectors to varying degrees (National Research Council, 2005). As most of the major TADs can cause economic impacts and are trade dependent, economies are seriously affected whenever there are outbreaks.

Box 1.1: Transboundary Animal Diseases

- **Classical Swine Fever (CSF)**: A viral disease of pigs that causes clinical signs such as fever, diarrhoea, coughing, skin lesions and bluish coloration (cyanosis) of extremities. It is usually fatal, especially among piglets. Many countries are free of this disease and occurrence is confined to much of Asia, Central and South America, and parts of Europe and Africa.
- **Foot and Mouth Disease (FMD)**: A viral and highly contagious disease that occurs in cloven-hoofed animals. Prominent clinical signs include mouth and feet lesions, salivation and fever. It is often fatal to young animals, but adult animals are likely to recover. It is endemic in parts of Asia, Africa, the Middle East and South America (with sporadic outbreaks in disease-free areas).
- **Highly Pathogenic Avian Influenza (HPAI)**: A viral and highly contagious disease that occurs among birds. In 2003, H5N1 HPAI spread among poultry and wild birds in Southeast Asia. It spread worldwide and while some countries have been able to address the outbreaks in their domestic poultry, the epidemic continues and persists in several countries in Asia and Africa. This disease is transmissible to humans (zoonotic), which makes control more complicated than epizootic FMD and CSF.

Adapted from the World Organization for Animal Health (OIE) Website (OIE, 2010a, 2010b, 2010c)

On a worldwide scale, the indirect and direct costs of TADs[2] range between US$7 million and US$2 trillion (FAO, 2009; FAO et al., 2008). Some of these costs are ongoing especially in countries where the diseases are endemic, while some are one-time costs of the control and eradication of TADs, especially in previously TAD-free countries. The 2001 FMD outbreaks in the United Kingdom (UK) cost the private and public sectors around £25 to £30 billion (FAO, 2009; Grubman and Mason, 2002). FMD outbreaks spread to neighbouring countries and the UK lost its status as an "FMD-free country without vaccination" for several months. FMD was eradicated from the UK later that year and the country regained its FMD-free recognition by the OIE the following year (OIE, 2002). Uruguay, on the other hand, spent US$7-8 million annually on FMD before finally eradicating the disease in 1997 (FAO, 2009). The 1997-98 CSF outbreaks in the Netherlands cost around US$2.34 billion to control and eradicate (FAO, 2009). The United States of America (USA) spent around US$65 million when HPAI outbreaks were reported in 1983-84 (FAO, 2009). The most costly TAD threatening the world economy to date is pandemic influenza A (H1N1), or swine flu, which is estimated to have cost around US$2

[2] Including other TADs such as Lyme disease, Bovine Spongiform Encephalopathy (BSE), Contagious Bovine Pleuro pneumonia (CBPP), African horse sickness and Theileria annulata.

trillion (FAO et al., 2008). The World Bank (2009) estimates a major influenza A pandemic would decrease the worldwide gross domestic product (GDP) by 4.8%.

For zoonotic TADs, or animal diseases that can transmit to humans, the social and health effects could also be great, especially if any outbreak of TADs is not well managed (National Research Council, 2005; Sandman and Lanard, 2005; Suder and Inthavong, 2008). The economic impact of TADs can go beyond the immediate industry. HPAI, for example, can affect industries other than the poultry industry (Rodriguez et al., 2009; Rushton et al., 2006). Rodriguez et al. (2009) explain that the decline in poultry production and stock often leads to a decline in poultry inputs such as feed and this, in turn, affects other sectors that consume poultry products. FMD, on the other hand, is economically the most important animal disease and the OIE prioritises it because of its contagious nature (OIE, 2010b; Randolph et al., 2002). It is a major barrier to trade and every member country of the OIE is required to report outbreaks of epidemiological significance (OIE, 2007b).

FMD is prevalent in parts of Southeast Asia and is the subject of the Southeast Asia and China FMD (SEACFMD) Campaign. An economic impact study of FMD in Cambodia showed that income losses to villagers due to outbreaks were estimated between "11% and 21.4% for cattle/buffalo and cattle/buffalo/pig farms, respectively" (OIE, 2007b, p. 7). An ADB-commissioned participatory poverty assessment also found that 70% of livestock producers rank animal diseases as a major threat to their household income (Siddiq, 2004). Thus, TADs affect the social and economic standing of GMS farmers, who are among the poorest in the world. Despite the amount of international assistance provided to GMS countries, some specifically focusing on livestock issues, there is continued spread of TADs (Otte et al., 2004). The active cooperation of developing countries such as Cambodia and Lao PDR is vital to control the spread of TADs in the region.

Various strategies have been used within local and international organisations, including the provision of veterinary services and extension services to address the spread of TADs (Canda-

Benigno et al., 2002; FAO, 2006b, 2008; FAO and OIE, 2004; FAO et al., 2008; Siddiq, 2004). There have been some successes in controlling TADs but overall they continue to spread.

A map of FMD prevalence (Figure 1.1) worldwide is shown to emphasise how one TAD can be of international concern. Figure 1.1 shows the prevalence of FMD worldwide as officially reported to OIE. Various environmental conditions contribute to the likelihood of TADs spreading and becoming endemic. These conditions are climate, geography, species, production systems, hosts and vectors, and control measures (Otte et al., 2004).

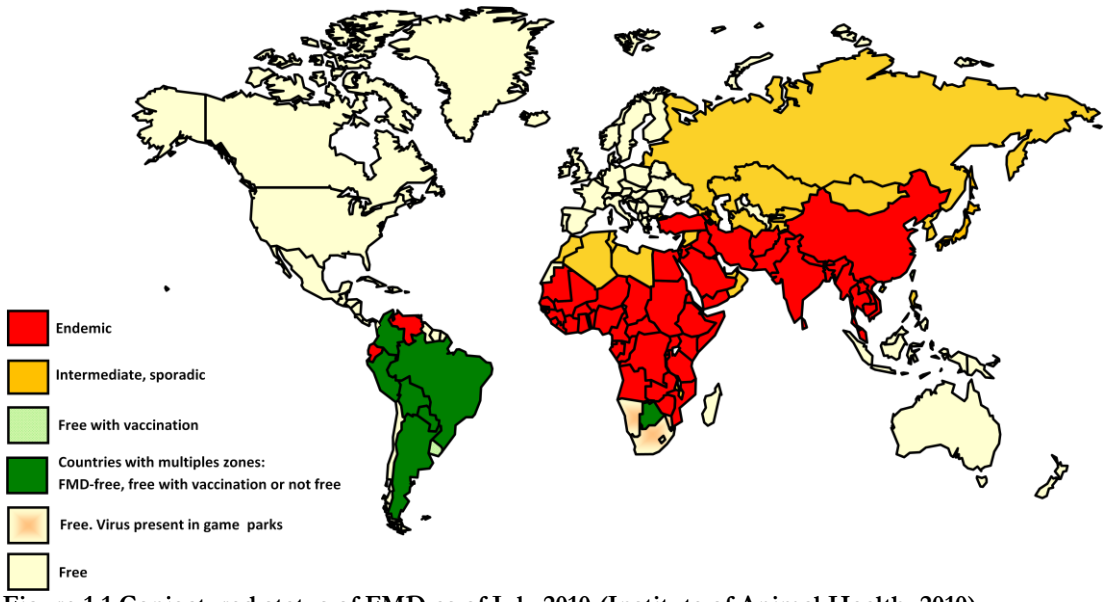

Figure 1.1 Conjectured status of FMD as of July 2010 (Institute of Animal Health, 2010).

It is now clear that the control of TADs is of great importance to every nation and sector of the world. The emergence of TADs such as Severe Acute Respiratory Syndrome (SARS) in late 2002 and H5N1 HPAI in 2003 highlighted the need for better engagement of the public to control TADs (FAO and OIE, 2004, 2007; FAO et al., 2008). The complexity of zoonotic TADs also bolstered the partnership between public and animal health authorities (FAO et al., 2008; WHO, 2005). The emergence of these TADs has led to an increased emphasis on technical aspects of animal disease control programmes with little corresponding attention towards the engagement of grassroots stakeholders in animal health programmes. This emphasis has frequently resulted in limited investment in integrated communication strategies. Some

evidence of the limited investment in AHC activities in the countries will be presented in this study.

There has also been an emphasis on top-down approaches for responding to emergencies and less emphasis on pro-active and participatory approaches, especially in communicating animal health issues. Participatory approaches espouse

> the participation of the intended beneficiaries in different or all of the project-cycle stages; horizontal dialogue rather than vertical information transmission; cultivation of trust and mutual understanding rather than persuasion; local-level actions rather than national-level programmes; local knowledge; the role of development specialists as the facilitator and equal participants rather than decision-makers; communication process rather than specific outcomes; and the use of communication to articulate deep-seated social relations (Inagaki, 2007, p. 7).

Inagaki referred to beneficiaries. Mefalopulos (2003) noted that the term 'beneficiaries' strongly connotes a vertical approach. I will use 'stakeholder' as a more appropriate term to reflect the role of the public in any development project.

While communication is recognised to be a part of animal health programmes and has been implemented as part of extension services, communication is often considered a lesser component of animal health management, especially in Southeast Asia. Part of the reason for this situation is that animal health experts have relegated communication roles to extension services staff. However, the extension services mostly involve training, the running of seminars and courses and prioritising non-animal health topics. The thin line between communication and extension services has led to some misunderstanding as to what communication is, and what role it plays in animal health; who should communicate; and how animal health experts should communicate. This is not to suggest that there is no effort to communicate animal health

issues; but rather that the lack of understanding of what, why and how to communicate animal health issues has resulted in some failures in engaging stakeholders, sometimes with direct consequences for the delivery of animal health services. This is even more evident in developing countries where there are limited resources and where social and cultural differences affect communication campaigns (Otte et al., 2004).

The benefit of improved communication in animal health matters, however, has gained recognition in the last decade and animal health authorities have engaged more in communication activities and shifted towards more dialogic, participatory practices. Specifically, the emergence of zoonotic diseases, especially in Southeast Asia in recent years, has prompted animal health authorities to use more sophisticated communication strategies to address risk behaviours among various stakeholders of the livestock industry. They have drawn on principles from related fields such as public health communication (Caro, 2008); social marketing (Alcos et al., 2002); risk and crisis communication (Llarena, 2006; Sandman and Lanard, 2005; Smillie and Blissett, 2010; WHO, 2005); and anthropology[3] (R. G. Alders and Bagnol, 2007; Hickler, 2007) among others, in an effort to establish the right balance between veterinary science and community engagement. Some of these approaches, or combinations of these approaches, have not been successful in the field and the evaluation studies have identified some deficiencies in their implementation (R. G. Alders and Bagnol, 2007; CARE International Vietnam and Quality of Life Promotion Centre, 2005; Caro, 2006, 2008; Chinis and Monsoor, 2007; Hickler, 2007). Results of these studies show that some strategies used were ineffective in engaging livestock stakeholders or communicating animal health issues; the risk-taking behaviour among stakeholders continued despite increased awareness of TADs (Hickler, 2007); and some knowledge in relation to the clinical signs of epizootic animal diseases by stakeholders (R. G. Alders and Bagnol, 2007; CARE International Vietnam and Quality of Life Promotion Centre, 2005; Caro, 2006). These are only a few studies that have evaluated communication in animal

[3] Alders and Bagnol's communication work started before the emergence of HPAI indicating early efforts to properly use communication in animal health programs

health directly and if it were not for the emergence of zoonotic outbreaks recently, funding for these studies would not have been possible.

1.2 COMMUNICATION IN ANIMAL HEALTH

To contextualise this research, in the following sections I briefly discuss how animal health communication evolved from agricultural extension. I will detail the results of the literature review on communication in animal health in the next chapter.

1.2.1 Agricultural Extension

Agricultural extension "has a venerable, albeit largely unrecorded, history" (Jones and Garforth, 1997). Jones and Garforth (1997), citing Bne Saad (1990), note that the practice of agricultural extension began around 1800 BC in Mesopotamia (present-day Iraq). There is evidence that government authorities provided agricultural advice to farmers during that period and later in Egypt, Greece and China (Jones and Garforth, 1997). Agricultural extension services started after the 1845 potato blight outbreak in Europe (Jones and Garforth, 1997). This outbreak prompted a concerted effort to centralise education of the public in improving and managing their crops. The term "extension" arose from educational development in England in the mid-19th century and the first attempt to use "university extension" was in 1867. Peripatetic lecturers discussed literary and social topics and by the 1890s agricultural subjects became prominent (Jones and Garforth, 1997). "Extension" activities, therefore, began as a means of educating people, but it was only in the 1890s that topics of peripatetic lecturers specifically focused on agriculture. Jones and Garforth (1997) note agriculture's importance and that farmers were the primary drivers of the establishment of agricultural extension as a field. They noted that it was only at the start of the 1900s that modern extension services, as we know them today, started to evolve when small-scale extension services were implemented (Jones and Garforth, 1997).

The conceptualisation of development soon after the Second World War strengthened the field of agricultural extension with development theoretical frameworks used to justify extension services strategies (Anyaegbunam et al., 2004; Jones and Garforth, 1997; Manyozo, 2006;

Mefalopulos, 2003, 2008). The modernisation paradigm guided development initiatives from then on, and the objectives of agricultural extension became broader as government funding increased and became an important aspect of its implementation (Jones and Garforth, 1997). In the early decades after the Second World War, the overarching goal of development activities was the modernisation of the agricultural sector (Navarro, personal communication). This goal placed agricultural extension activities at the forefront of most development initiatives, especially in developing countries. Everett Rogers' diffusion of innovations theory became the most influential framework in agricultural extension (Waisbord, 2001; Zhou, n.d.) proposing that innovations were transferred to target audiences through mass media (Mefalopulos, 2003, 2008; Rogers, 2003; Waisbord, 2001). Most agricultural extension strategies are based on the dissemination of knowledge technologies using mass media such as television, radio and print. In the 1970s the World Bank advocated the use of a Training and Visit (T&V) approach to agricultural extension (Farrington, 1995; Zhou, n.d.) and invested more than US$1billion on projects involving research and extension. The funding increased to around US$4.7billion in the 1980s (Farrington, 1995). The T&V approach is characterised by a linear flow of command (usually from the national office down to regional field units); the stripping of unnecessary services; a focus on farmer-leaders; structured training programmes and activities; and reliance on research (Farrington, 1995). The top to bottom approach to educating farmers and/or communicating animal health issues to "intended beneficiaries" of the T&V has strong affinity with the principles of the diffusion of innovations theory.

The diffusion of innovations theory has been criticised for the lack of consideration of the importance of interpersonal communication (Manyozo, 2006; Mefalopulos, 2003, 2008; Quebral, 2006; Servaes, 2008; Wilkins and Moody, 2001). As the T&V approach is a classic example of the diffusion of innovations in practice, it, too, has been criticised, even within the World Bank, "for its lack of responsiveness, flexibility and feedback" (Farrington, 1995, p. 538). There were a number of scholars, in the late 1960s and early 1970s, who forwarded alternatives to the diffusion of innovations theory and the linear approach in the field, and during this time Rogers and other theorists associated with the diffusion of innovations theory reworked the

theory accordingly. Inagaki (2007), particularly, mentions two strands of criticism of the modernisation theory. He notes that the approaches that followed the dependency theory and the participatory approaches criticised the linear approach of the modernisation theory, or more specifically, the diffusion of innovations. Supporters of the dependency theory argued that underdevelopment was not innate to developing countries, but was imposed on them, based on international political order (Inagaki, 2007; Wilkins and Moody, 2001; Willis, 2005). Inagaki (2007) describes the subjugation of less developed or developing countries by wealthy nations influencing national policies in exchange for trade and aid.

One of the alternatives to the diffusion of innovations theory put forward by the late 1970s is the participatory approach to development. Over time, participatory approaches have evolved to become both a set of methods and strategies. The common characteristic of participatory approaches to research and development initiatives is the inclusion of grassroots stakeholders in the process. Some of the theorists who advocate participatory approaches include Freire, Servaes and Quebral among others (Inagaki, 2007; Manyozo, 2006; Quebral, 2006). Mefalopulos (2003, 2008) suggests that there was never a true participatory approach to development; rather, there were just varying levels of participation in development projects. Rogers and other advocates of the diffusion of innovations theory integrated some changes such as giving importance to interpersonal communication and acknowledging the limits of mass communication. While supporters of the diffusion of innovations theory tried to break away from the modernisation paradigm, the association persists due to the paternalistic nature of the theory, that is, a model based on the notion that information should come from the experts down to the grassroots communities.

1.2.2 Agricultural Communication

A related but separate field, agricultural communication, also evolved between the 1940s and the late 1960s in North America. This field, while conceptualised by scholars in different ways, deals largely with the in-depth examination of the process involved in communicating agricultural issues. Agricultural extension was more prescriptive, while agricultural communication was more

focused on engaging the "target audiences" (Manyozo, 2006; Zumalt, 2004). However, practice in agricultural communication went beyond communicating agricultural concerns, leading to the conceptualisation of the field of development communication (Manyozo, 2006; Quebral, 2006). The concept and practice of development communication is highly political and will be discussed in more detail in the next chapter.

In general, then the frameworks that have guided communicating about animal health are agricultural extension and agricultural communication. As an approach to convey results of agricultural research, the T&V strategy continues to be used widely in Southeast Asia. Ideally, animal health authorities receive feedback through the results of agricultural communication research studies. However, there are only a few relevant studies to draw on despite the adoption by governments in Southeast Asia of agricultural extension and agricultural communication strategies in their animal health programmes (Alcos et al., 2002; Hickler, 2007; Rojo-Laurilla, 2002). Despite the dearth in literature documenting the use of these fields in animal health, the adoption of governments also indicates that there are strategies to educate grassroots stakeholders and attempts to examine how to communicate animal health issues to the grassroots farmers. The main purpose of "communicating" with the public in animal health is to educate or raise awareness. There has been limited participation of stakeholders in the planning and implementation of disease control strategies, but this practice is not widespread (Manyozo, 2006). Despite acknowledgment within the animal health sector worldwide of the importance of communication, especially with the emergence of zoonotic diseases, the lack of stakeholder engagement and, most of the time, the ad hoc nature of communication, particularly in developing countries, means that there is no systemic and effective communication. The adoption of participatory approaches, where communication approaches figure prominently in disease control has only been feasible in developing countries if there has been international assistance (funding and technical) (FAO, 2008; McCrindle, 2003; Zottele et al., 1993). There were cases in Latin America where participatory approaches to development have worked but with the need of intensive participation of the private sector (Imparato and Ruster, 2003). I have

not found any documentation regarding participatory approaches to disease control where communication activities were highlighted.

The OIE first officially recognised the role of communication in a 2001 General Assembly resolution (OIE, 2002). Resolution XXI entitled "The Role of Communication Management in Assisting Veterinary Services" describes what the OIE perceives as communication. It mainly refers to "technologies" that will "contribute to improving the functioning and the scientific, technical and operational output of Veterinary Services" (OIE, 2002, p. 43). One of the recommendations of the resolution states that countries must be able to "develop information and communication *systems* to respond to both crisis situations and routine requirements" based on "their human, technical and financial potential" (OIE, 2001, p. 43; emphasis added). The OIE was referring to information and communication technologies (ICT) to assist veterinary strategies. One example of ICT strategies for animal health is geographical information systems (GIS) software. GIS-based software stores information on serological and/or epidemiological surveillance, including animal movement and disease outbreaks among others. Figure 1.1, presented earlier in this chapter, is an example of a GIS-generated map. Animal health officers use such information to arrive at critical policy, animal movement management or serological surveillance decisions. The OIE recommended in Resolution XXI that "veterinary administrators of member countries reinforce their capacity to rapidly exchange relevant and reliable information with their national and trading partners, neighbouring countries and international organisations and institutions (in particular with the OIE) and reinforce their relations with the media" (OIE, 2001, p. 43). Reference to "exchange of information" and use of "systems" have been implied or repeated throughout the resolution. It was only in the first recommendation that the involvement of stakeholders was mentioned, wherein it was proposed that "the promotion and management of information and communication become one of the priorities of Veterinary Services, particularly for reinforcing epidemio-surveillance systems, risk management, emergency response activities, *information and involvement of livestock producers and consumers*" (OIE, 2001, p. 43; emphasis added). While the resolution has encouraged member countries to consult with livestock producers and consumers in the management of

communication, the involvement of these people is mostly limited to animal health activities such as animal vaccination, animal movement permits, sample collection, and quarantine orders. Moreover, other authors have suggested that there is no real involvement of the various stakeholders in the planning of strategies (R. G. Alders and Bagnol, 2007; Caro, 2006; Catley and Croxton, 2001).

The intent of the recommendations in OIE resolution XXI was to encourage member countries to comply with promoting communication as a means of improving veterinary services, including better media relations. The OIE encouraged members to acquire information and communication technologies that would support veterinary services with assistance from donors and other stakeholders. However, because of the economic position of some OIE member countries, the need for foreign aid was inevitable. Overall, communication as described in OIE resolution XXI focused mainly on crisis communication and horizontal communication among organisations or agencies (OIE, 2002). This OIE resolution still appears to be based on the theory of diffusion of innovations, wherein there is great reliance on mass media to transfer information that ought eventually to lead to adoption of the relevant disease control measures. The OIE later acknowledged that there was a need to expand the scope of the vision of animal health communication "to a wider applicability to encompass all aspects of communication and lead to a definition of strategic communication as relevant to animal health policies and activities" (OIE, n.d.). This acknowledgment shows that the OIE recognises that technology alone will not be able to reinforce animal health services but that there is also a need for strategies to promote better engagement of the community. This also suggests that OIE recognises some shortcomings in its existing mostly one-way and top-down strategies, which do not provide for the collection of real feedback. Animal health authorities consider outbreak reports as feedback from the field but these do not contain evaluation data from which the effectiveness of animal health services or strategies implemented could be ascertained. These reports are only confined to monitoring of disease outbreak occurrences.

A recent evaluation of animal health frameworks in the USA highlighted another example of the increasing importance of communication in animal health (National Research Council, 2005). The GMS countries modelled their animal health framework on practices in western countries including the USA. The US National Research Council described the key elements of the American animal health framework as consisting of people in the frontline such as personnel in slaughterhouses, quarantine stations and farms (National Research Council, 2005). In Southeast Asia, people on the frontline include farmers and animal health workers such as village volunteers and extension workers. It was stated in the National Research Council (2005) report that other categories that complete the animal health framework include animal health professionals and advisers; national and local government officials and lawmakers; international collaborators and supporting institutions. Overall, the animal health framework was mainly composed of 'technical' areas and experts from epidemiology, disease diagnostics and animal movement management. These are the traditional components in animal health management. However, the Council acknowledged that there was a need to improve some aspects of the framework, particularly, its animal health communication (National Research Council, 2005). The animal health communication that the Council described was the improvement of communication within veterinary services organisations and between related organisations, such as public health and other regulatory institutions. This reinforces the significance of organisational communication.

The evaluation of the US animal health framework showed that a top-down approach was prevalent and there was a need to improve horizontal communication. There was not enough engagement of grassroots stakeholders, and although there were efforts towards horizontal communication, this was only to the extent of engaging other organisations. This might imply that the Americans were leaning to a more participatory approach to animal health management. However as suggested earlier the council was referring to a horizontal communication limited to members of the organisation or related organisations. Grassroots stakeholders became 'receivers' in the 'new' US animal health framework and were not identified as active participants

in the management of animal health. Strictly speaking, there was still no communication with the grassroots stakeholders in the proposed new animal health framework.

1.2.3 COMMUNICATING ANIMAL HEALTH ISSUES

The Australian government through its aid and research agencies first highlighted the use of communication in animal health programs. An Australian Centre for International Agricultural Research (ACIAR) project in Mozambique first actively used extension or communication activities in controlling animal diseases specifically Newcastle disease (ND) in 1996 (R. Alders and Spradbrow, 2001). Alders and Spradbrow (2001) called the extension activities in animal health as veterinary anthropology. It can be considered as the first serious attempt to participatory approaches in engaging stakeholders in animal health. The following year, the Australian Agency for International Development (AusAID) granted assistance to the Philippines after its worst FMD epidemic in history, which severely reduced the swine population of Luzon, the Philippines' main island and largest swine producing island (Canda-Benigno et al., 2002). A prerequisite for the grant was the redrafting of the Philippine FMD plan to include four key components: disease epidemiology/surveillance, quarantine (later known as animal movement management), disease diagnosis (laboratory management) and community awareness (later renamed FMD communication and then communication management). The National FMD Task Force (NFMDTF) was the first of its kind in the Philippines to be dedicated to a single animal disease and could be considered the first animal health programme in the country where communication was integrated as a key component. Communication activities in the NFMDTF took prominence when the "Farmers' School on the Air (SOA)" began (Rojo-Laurilla, 2002). It was a distance-based farmers' education radio programme. More than 1000 farmers simultaneously participated in the SOA making communication the most intensive and extensive activity of the FMD campaign. Other technical activities such as vaccination, quarantine checkpoints, legislation and serological surveillance among others were already in place prior to the redrafting of the FMD plan. The impact of the SOA was almost immediate as FMD outbreaks dramatically decreased soon after the first year of the epidemic or

the implementation of the new FMD plan (Canda-Benigno et al., 2002; Rojo-Laurilla, 2002). Sustaining interest among key stakeholders, including the media, became a continuing challenge as FMD cases become sporadic. Concern and interest among stakeholders, including policy makers, increased only when cases began increasing (Alcos et al., 2002). By the year 2000, the Philippines was a model for neighbouring countries because of its success in communicating animal health, specifically in its communication campaign against FMD.

As most of the technical support for the NFMDTF came from Australia, it was not surprising that the communications team, in the early years of trying to define their practice, also took inspiration from communication planning in Australia. Australia has a well-placed emergency plan for various animal disease crises and the series of operation manuals include a module addressing public relations (PR) (Animal Health Australia, 2007). Communication strategies principally discussed in the PR manual are community awareness and media relations (Animal Health Australia, 2007). As it is an emergency plan, the detailed strategies focus on pre-, ongoing and post-crisis scenarios. Animal health authorities in Australia activate the plan only when they deem that there are imminent emergencies or crises (Animal Health Australia, 2007, p. 3). PR is emphasised in each emergency animal disease operation plan. While the PR plan is an effective guide, especially immediately prior to, during or after a crisis, it assumes that industry stakeholders have an agreed biosecurity plan and established agricultural policies on disease emergencies as the plan stated (Animal Health Australia, 2007, pp. 20-24). Such assumptions might be misplaced in developing countries, making the Australian animal health PR model hard to apply in other contexts, such as the Philippines or any country in SEA where there are, most likely, no plan or policies to support such emergencies. The SEACFMD Campaign acknowledged this situation and made efforts to empower countries by encouraging national policies that will support animal health activities at the grassroots (OIE, 2007a). The endemic nature of FMD in the Philippines infers a need for sustained communications activities. Although the Australian PR emergency plan could functionally guide a sustained campaign against animal diseases, the plan is vertical in nature. It is not appropriate in countries with endemic TADs, especially in developing countries. Despite the success of FMD communication

in the Philippines and similar efforts in neighbouring countries, the lack of engagement of stakeholders and the existence of a strong framework in animal health communication means these strategies always require improvement.

1.3 RESEARCH AIMS AND OBJECTIVES

The overall objectives of this research are described below. Individual chapters will have specific aims to support these objectives:

- Describe the practice of animal health communication in the GMS specifically in Cambodia, Lao PDR and Vietnam;
- To evaluate effectiveness of FMD and HPAI communication campaigns in Cambodia and Lao PDR;
- To develop methods appropriate for research on animal health communication in Cambodia, Lao PDR and Vietnam;
- To understand the practice of animal health communication at the village level in Cambodia and Lao PDR; and,
- To use the research findings to recommend improvement in communicating on TADs.

1.4 OVERVIEW OF THE THESIS

I have introduced my research in this chapter by highlighting the importance of the livestock industry in the GMS and showing how communication evolved in animal health. I have justified the importance of this research by showing that the value of communication has been acknowledged in animal health only recently despite claims that it has been practised since agriculture began. An overview of chapters follows, together with details of how each will

contribute to the investigation and evaluation of communication on TADs in selected GMS countries.

I will contextualise the relationships between communication, development and livestock in Chapter 2 by reviewing the literature. I will also trace the roots of animal health communication and the conceptual frameworks that have influenced it, particularly development communication. A clear understanding of what development communication is and how it should be practised will highlight a better understanding of animal health communication and how it should be practised.

In Chapter 3, I explain the decisions and processes that led me to the methods that guided this research. The study was divided into three phases — the knowledge, attitudes and practices (KAP) survey; the exploratory field study and the main field study.

I detail the results of the KAP survey in Chapter 4. My main objective in the KAP survey is to collect the demographic and baseline data of study participants in Cambodia, Lao PDR and Vietnam. I intend to use the data from this part of the research as background information and to identify provisional themes for further study.

In Chapter 5, I detail the results of the second phase of this research; exploratory field study. As the name implies, this phase was exploratory in nature with the intention of confirming the findings of the first phase and identifying major themes for further research.

In the last part of my research, I investigate the role of village animal health workers (VAHWs) and evaluate the communication campaigns in Cambodia and Lao PDR. These two topics were identified as some of the important factors in the communication on TADs in Chapter 5. I decided to discuss the results of the main study in two chapters because of the complexity of each topic. I discuss the results of my investigation of the communication role and practices of VAHWs in Chapter 6. VAHWs are among the most important communication agents and those most preferred by most grassroots stakeholders so I focused on evaluating the communication

role and practices of VAHWs to investigate how to strengthen grassroots communication. I review the VAHW system in both countries based on published and unpublished literature. I also refer to the perceptions of this research's study participants of what they consider as communication roles of VAHWs. I examine transcripts of the interviews and focus group discussions (FGDs) to investigate communication at the village level. I present the results of the evaluation of communication campaigns in both countries in Chapter 7. I present how HPAI and FMD communication campaigns are implemented in Cambodia and Lao PDR. I evaluate HPAI and FMD communication campaigns to compare the effectiveness of both campaigns and whether the nature of the diseases affected how stakeholders were motivated to engage communication messages.

I reflect on the results of my investigations and evaluation in Chapter 8 where I also present my conclusions and recommendations. It is here that I present a new approach to implementing animal health programmes where communication is integral to achieving better animal health. It is beyond the scope of this thesis to evaluate the approach in the field. The feasibility of the new approach is based on the literature on the effectiveness of participatory approaches in development studies and on the field research I conducted into investigating and evaluating communication on TADs as it is practised in three GMS countries. Finally, I recommend further study based on the findings of this research project.

CHAPTER TWO
LITERATURE REVIEW

In this chapter, I investigate the origin of AHC through the review of literature and fields that influenced its development. I will also contribute my experiences as a member of the Philippine FMD Task Force, which became one of the pioneers in emphasising communication about TADs. Firstly, I will contextualise the relationships between development, livestock and communication in this chapter to further demonstrate the importance of this research and emphasise the relevance of communication in development initiatives. I will also present the strengths and weaknesses of qualitative and quantitative approaches to justify the combination of the two in this research.

2.1 INTRODUCTION

Communication in animal health has been influenced by a number of fields including agricultural extension (Farrington, 1995; Manyozo, 2007; Sligo and Massey, 2007; Zhou, n.d.) and development communication (Cadiz, 2006; Manyozo, 2006; Quebral, 2006). To understand the theoretical underpinnings of AHC, it is useful to review the relevant literature that has influenced its evolution and can therefore contribute to the investigation and evaluation of AHC campaigns. AHC, in the context of this research, "is the study and use of communication strategies to inform and influence individual and community decisions to enhance animal health and prevent, control and eradicate animal diseases."[4] While it aims to "inform and influence" this research is mainly participatory in nature, thus taking into account the realities and knowledge of grassroots stakeholders. Development communication partly evolved from reflecting on different development theories and theories of social change. Thus it is necessary to first discuss development and its relationship to communication.

[4] Extended definition adapted from the public health communication of US Department of Health and Human Services (National Cancer Institute, 2003)

2.2 COMMUNICATION, DEVELOPMENT AND LIVESTOCK

The strong connection between communication and development was strengthened soon after World War II. Sosale (2008) suggests that, currently, the two concepts are so intertwined that one guarantees the other. The complexities involved in concepts of communication and development have meant that precise definition do not exist (Frey et al., 1991; Willis, 2005). Frey et al. (1991) note that the first attempts to define communication were "information-based" views that were top-down in nature (Manyozo, 2006; Mefalopulos, 2008; Waisbord, 2001). Earlier theorists, such as Berlo (1960) conceived communication as a process of transferring messages through a channel to a receiver. Such concepts became known as transmission models. In fact, during most of the last century, communication was understood to be a process of transferring from one individual or entity to another. This thinking is often used in the field of communications engineering where mathematicians and engineers explain how communications technology works or how a message is transmitted in a network such as a telephone or the internet using transmission models of communication.

Later definitions of communication were "meaning-based" or focused on producing meanings and relationships (Frey et al., 1991; Servaes, 2008). This definition has appealed to anthropologists and social scientists because it implies that communication is a process dependent on the interpretation and behaviour of the parties involved. A meaning-based approach to communication, therefore, is a behavioural and cyclic process with the aim of arriving at a common meaning. A "meaning-based" definition of communication (Craig and Muller, 2007; Frey et al., 1991; Shirato and Yell, 2000) will be adopted for this research project. The definitions of communication presented, whether meaning or information-based, are appropriate depending on their context. However, communication in development is complex as one development situation differs from another. To emphasise, I am taking a "meaning-based definition" approach to communication. I consider that social constructs of meaning are defined by the community and, thus, it is important to investigate any phenomena from the perspective of those concerned. I will explain this ontology in detail in the next chapter.

As with communication, development is a highly contested concept. Development can be defined as achieving economic growth, equal rights and democracy or a standard of wealth comparable to Western countries (Mefalopulos, 2008; Quebral, 2006; Servaes, 2008; Waisbord, 2001). The conceptualisation of development as a product can be traced to post-World War II when it was first understood as a concept that can be transferred (Mefalopulos, 2003, 2008; Waisbord, 2001; Wilkins and Moody, 2001; Willis, 2005). Most international and intergovernmental organisations, such as the World Bank, have embraced this concept and implemented development projects based on the premise that development can be transferred in a straightforward manner. One of the most prominent development paradigms that has guided most of these development projects in the last few decades is the modernisation paradigm. Poverty in the modernisation paradigm is a result of lack of information among the population (Mefalopulos, 2003; Waisbord, 2001). In this argument, communication is viewed as an important tool in development and is emphasised as one of the keys to poverty alleviation. Development in the dominant paradigm is "a linear, cumulative, evolutionary and unidirectional process" (Servaes, 1991 as cited by Mefalopulos, 2003, p. 22; Servaes, 2008), which is why transmission models of communication figured prominently in the abstraction of development. The conceptual relevance of "transmissibility" for development is associated with how a message is "transmitted" to a receiver. One of the most influential theories of this paradigm is the diffusion of innovations theory as elaborated by Everett Rogers (Waisbord, 2001). Rogers explained that diffusion of innovations is "the process by which an innovation [is] communicated through certain channels over time among the members of a social system" (Rogers, 1983 as cited by Inagaki, 2007, p. 6). Rogers explains that development will not arise in a "closed system" unless external intervention occurs. He concludes that communication is central to modernisation in such cases (Rogers, 1969, p. 48 as cited in Melkote, 1991). The modernisation paradigm and diffusion of innovations theory have been criticised for "simplifying" the concept of development as something that can be transferred from one country to another. The modernisation paradigm has also been condemned for being too focused on "Western" countries and blaming developing countries for their own woes (Inagaki,

2007; Waisbord, 2001; Willis, 2005). The term development in the modernisation paradigm means following the standards of western countries, which suggests that the modernisation paradigm is prescriptive in nature. Some development scholars and non-government organisations have been sceptical that "development" can be used to informally sustain colonisation, or to further the interests of developed countries in Third World countries or underdeveloped countries (Inagaki, 2007; Mefalopulos, 2003; Willis, 2005). International loans sought by underdeveloped countries in order to improve their economic and social status are often conditional upon the borrowing country implementing particular taxation and public expenditure measures. Such measures are often considered by critics to have negative effects on the community and local economy (Bird, 2003; Vreeland, 2003). As discussed earlier, the modernisation paradigm assumes that lack of information results in underdevelopment and, thus, higher media penetration has been one of the many ways by which most international and intergovernmental organisations have tried to introduce development. Categories used for evaluation have largely encompassed knowledge, attitudes, practices and communication media exposure (Inagaki, 2007). However, improving the stakeholders' knowledge, attitudes, practices and increasing their exposure to different communication media does not necessarily cause development. In many ways, while some of the development projects have made some impact in the countries in which they have been implemented, the impact itself has simply concerned the promotion of development (Inagaki, 2007). Results in the field studies of this research reveal instances of TADs campaigns that merely focused on public awareness of TADs without addressing TAD control. Specifically, there has been increased public awareness of HPAI while risky behaviours have continued (Hickler, 2007). There may be increased awareness of development initiatives and their importance without true development in the community. This can occur when there is no apparent empowerment of stakeholders or sustainability of the development framework (Vreeland, 2003).

The ineffectiveness in the implementation of development projects suggests a need to engage and empower stakeholders to achieve economic development. One of the most accepted keys to economic development is agriculture. Improvement efforts in this field include the reorientation

of agricultural extension, a topic introduced in the first chapter. In the following section, I will further detail efforts to reorient agricultural extension as a modern proactive tool in agriculture. I will also detail how agricultural extension has been applied to livestock. The review will also aim to better understand the role of communication in animal health, and explore the historical context of the conceptualisation and practice of AHC.

2.2.1 Agricultural Extension

The FAO defines agricultural extension as "a service or system which assists farm people, through educational procedures, in improving farming methods and techniques, increasing production efficiency and income, bettering their levels of living and lifting the social and education standards of rural life" (OIE, 2009, p. 33). This definition was later revised to refer to "men, women, youth, and the most disadvantaged groups in general, encouraging and involving rural people's own organisations, enhancing individual and collective self-reliance, and environmental and population issues" (ibid). This revision was instigated because of inherent problems in the original understanding of what agricultural extension is. It can also be noted that the revision reflects a move towards more engagement of stakeholders by "encouraging and involving" them to enhance "self-reliance" and other issues. Feder, Willett and Zijp (1999) note that the generic problems of agricultural extension include the scale and complexity of programmes; dependence of extension on the wider policy environment and other agency functions. They also note other problems with implementing agricultural extension programmes such as the inability to trace cause and effect; the lack of political support and commitment; the lack of accountability in the field; the tendency to become a vehicle for public service functions beyond agricultural knowledge and information transfer; a lack of operating resources and fiscal sustainability; and problems in the interaction with knowledge generation.

In developing countries, agricultural extension services focus on a wide array of agricultural issues from crops and fisheries to livestock. Feder et al. (1999) suggested some possible solutions which included focusing on a single commodity. This is exactly what happened in the Philippines when authorities established the first task force dedicated to FMD. This has

somehow addressed the issue of agricultural extension addressing complex programmes by simplifying the approach to an agricultural issue, in this case, dedicating manpower and resource to one disease. Feder et al. (1999) noted that agricultural extension workers did not only teach techniques to address agricultural issues but were also asked to do other duties, such as conducting surveys, writing reports, and monitoring disease outbreaks. These responsibilities are very common in countries in the GMS where there is a shortage of personnel in agricultural extension as well as a lack of resources and, sometimes, expertise.

2.2.1.1 Resolving Inherent Problems of Agricultural Extension

One of the strategies endorsed by the World Bank to mitigate some of the earlier mentioned inherent problems in agricultural extension in developing countries is the training and visit (T&V) approach (Ameur, 1994 ; J. R. Anderson and Feder, 2003; Farrington, 1995; Jones and Garforth, 1997; Malynicz, 1969). The T&V approach features one lead strategist with a line of command from the national level down to the local agricultural department, thus ensuring a uniform theme, nationally, for any agricultural training strategy. An in-house expert, for example, in animal movement management, ensures that there are experts who can train trainers. Usually, the in-house expert is the one who personally trains the experts. The strategy also boasts an "exclusive dedication to information dissemination work" (J. R. Anderson and Feder, 2003, p. 17). Feedback mechanisms through field visits are also integrated in the strategy to ensure proper evaluation of activities. Transportation is provided to field staff to ensure that most stakeholders can be reached (J. R. Anderson and Feder, 2003). Information dissemination in extension work was formally removed, however, when the T&V approach was implemented to maximise efforts in training key farmers in the community. This approach also proved to be an expensive option that critics branded it as unsustainable and costly. In addition, the need for a larger network of extension workers for the implementation of the T&V approach creates a need for more public funding (J. R. Anderson and Feder, 2003).

Participatory approaches became increasingly popular in the 1980s and their apparent successful use in other development projects prompted their greater inclusion within agricultural extension

work (Ameur, 1994 ; Farrington, 1995; World Bank, 1995). Nevertheless, since there was no institutional model for delivering participatory approaches in extension services, the privatisation of agricultural extension services emerged slowly (World Bank, 1995). Privatisation was also thought to provide a solution to the apparent lack of public accountability in the T&V approach. The privatisation of extension services began in the mid-1980s in Western countries, e.g., US, New Zealand and United Kingdom (Jones and Garforth, 1997) and in some developing countries, e.g., Mexico, El Salvador and Tunisia (Rivera and Cary, 1997). Privatisation in developing countries was slow and, in most cases, was applicable only to commercial farmers. There were also some issues in the privatisation of agricultural extension, including fears that grassroots farmers would undervalue agricultural information and, thus, not pay for it. This was remedied by further stratifying the group of farmers that needed agricultural extension services (J. R. Anderson and Feder, 2003). Grassroots farmers were served by public extension workers, while rich farmers were expected to pay fees. Inevitably, there was still some public funding of private agricultural extension services. This shift to privatisation with some public funding may have indicated to various government and non-government organisations the need for a better strategy.

There are other approaches in agricultural extension that have been tried or are currently being implemented to address the inherent problems detailed in the earlier section, for example, the scale and complexity of programmes; the dependence of extension on the wider policy environment and other agency functions. However, the choice of a specific approach depends upon a specific situation otherwise its significance is lost (Nagel, 1997). Nagel (1997) notes other approaches to organising extension services such as: public versus private; government against non-government; top-down (bureaucratic) against bottom-up (participatory); profit against non-profit; free versus cost-recovery; general versus sector; multipurpose against single purpose; and, technology-driven versus need-oriented (Nagel, 1997). Zhou (n.d.) also notes that the new approaches to extension emphasise the development of agricultural innovation systems, pluralism of service providers and demand-driven extension services. Despite these different approaches, the two emergent main factors of agricultural extension have been technology

transfer and human resource development (Nagel, 1997). These strategies implied a downward approach to development and skills development. Chambers and Ghildyal (1985) propose the "farmer-first-and-last" model in agricultural research as an answer to the challenges of the "technology transfer". Their model prioritises communication with farmers from planning to evaluation. It is agricultural extension with a leaning towards participatory approach.

The evolution of agricultural extension in the Philippines is particularly interesting. Nagel (1997) notes that the ministry-operated extension services in the Philippines were connected with the university sector, specifically the University of the Philippines Los Baños (UPLB). The university-based extension services in the Philippines have gone beyond agriculture in that they tested communication strategies as well as production technology (Nagel, 1997). This approach was later known as development communication, which became a distinct field of its own (Cadiz, 2006; Manyozo, 2006; Quebral, 2006).

2.2.2 Development Communication

In this section, I explore further the origin of development communication, which traces its roots from countries in Latin America, Asia and Africa (Waisbord, 2001). While there has been much debate about its origins, scholars agree that the pioneering work on community radio in Columbia during the 1940s was a seminal point for development communication (Manyozo, 2006). By the 1950s, Nora Quebral, who was considered to be the world pioneer of development communication, and her colleagues started a series of participatory communication research studies[5] in the Philippines (Manyozo, 2006). A highlight that she described was assisting in the training of technicians for a World Bank grains project. Quebral (2006) et al. emphasised that grassroots stakeholders must understand what they needed and what they had to do. In 1972, Quebral (2006) formally coined the term 'development communication' (DevCom) and defined it as

[5] The PhD thesis of Mefalopulos (2003) is one of the most recent studies on participatory communication theory and practice.

> the art and science of human communication applied to the speedy transformation of a country and the mass of its people from poverty to a dynamic of state of economic growth that makes possible greater social equality and the larger fulfilment of the human potential (p. 101).

Within this field various strategies and approaches were combined to communicate development at the grassroots level using audience studies, communication planning and theories behind human behaviour to support strategies implemented in the field. Early DevCom research projects were conducted before the formal introduction of participatory approaches in the late 1970s. The aim of using participatory approaches is to involve grassroots stakeholders in the development process. Ideally, these stakeholders participate from the very beginning and continue through to the evaluation of the developmental project. Chambers and Ghildyal (1985) emphasise the importance of communicating with farmers and understanding their role in agriculture. As I mentioned earlier, their farmer-first model became one of the first few models that guided the participatory approach to communicating with grassroots.

There have been disagreements about the conceptualisation and practice of DevCom (FAO, 2006a; Inagaki, 2007; Manyozo, 2006). Mefalopulos (2003), for one, criticised DevCom for its alignment to the tenets of the modernisation paradigm. In some cases, development projects were branded as participatory; however, in practice, they were not. For this reason, Mefalopulos insisted on using "communication for development" as a term for communication that included participation. Bessette (2004a) suggested the use of 'participatory development communication' to emphasise the participatory nature of DevCom.

In an interview with Cadiz (2006), Quebral explained that calling DevCom "participatory" was redundant as DevCom was designed to be participatory. Quebral explained that there was a lack of terminology when she first presented her paper (Cadiz, 2006). This is the reason that terms such as diffusion and persuasion, which are associated with the modernisation paradigm, were

used in her paper (Manyozo, 2006). This review of DevCom literature is therefore also a review of participatory communication. Quebral (2006) acknowledged that United Nations agencies were the first to formally recognise communication in development, but she argued that the UN communication for development adhered to the modernisation paradigm or sometimes referred to it as "western theories." She explained that the field was just emerging and it was conceptualised within the context of the "prevailing development and communication concepts at that time" (Cadiz, 2006). Quebral and her colleagues at the UPLB were already studying development communication long before it was "coined" as such, and later championed by Western scholars. The UPLB team consistently applied "coherent method and theory" in using "communication in development" (Manyozo, 2006). Authors (Cadiz, 2006; Manyozo, 2006) cited Quebral's revised definition of DevCom as

> the art and science of human communication linked to a society's planned transformation from a state of poverty to one of dynamic socio-economic growth that makes for greater equity and the larger unfolding of individual potential (p. 83).

The difference in this definition is that it is more purposive. It also more reflective of DevCom's participatory nature, particularly in specifying that it is "communication linked to society's planned transformation" compared to the previous definition in which communication is "applied to the speedy transformation of a country" which implies an imposed change on the community. Quebral stated that the evolution of the context of development also saw a change in defining DevCom worldwide (Cadiz, 2006). During the First World Congress of Communication for Development (FWCCD) held in October 2006, more than 900 participants agreed to define DevCom or communication for development as:

> a social process based on a dialogue using a broad range of tools and methods. It is also about seeking change at different levels including listening, building trust, sharing knowledge and

> skills, building policies, debating and learning for sustained and meaningful change. It is not…corporate communication (The Communication Initiative et al., 2007, p. xxxiii).

I believe that mutual understanding in international development, through participatory approaches, began to evolve when Quebral and her colleagues started researching DevCom (Quebral, 2006). However, it was only in the 1980s that participatory approaches became popular and were highlighted in the international development field. Despite the introduction of participatory approaches and their apparent wider acceptability, the modernisation paradigm persisted. Huesca (2008) also supports this notion that development communication is participatory in nature. However, it may not be ideal and there are challenges in achieving a true participatory approach to communication because as I will note later there are institutional and practical challenges, which Huesca (2008) also notes. These challenges have been acknowledged but authors agree that a participatory approach to development communication is a more dynamic and sustainable approach to development (Huesca, 2001; Inagaki, 2007; LeFevre et al., 2000; Mefalopulos, 2003; Quebral, 2006).

There is some merit in the pervasiveness of the modernisation paradigm and the appeal of a participatory approach. In animal health, the fusion of these two approaches might be used to address some unresolved issues in AHC. Practically, there are some parts of animal health services that are not meant to be participatory in nature, such as the diagnostic process. Standards must be adhered to whenever laboratory techniques or even strategies are discussed. However, in terms of developing effective campaigns which will bring about improved animal health practices, a participatory approach is necessary. These activities might include animal movement management, vaccination strategies and disease surveillance. Overall, any development initiative should take a participatory approach where grassroots stakeholders are involved, from the beginning of any developmental project through to its evaluation. The participation of grassroots stakeholders is important because it ensures that any development initiative has the blessings of stakeholders. One of many examples of failed development

initiatives is an irrigation project in Africa, specifically in Mozambique (Anyaegbunam et al., 2004). The stakeholders were never consulted about the project and, as a result, the farmers threatened project staff. The irrigation project was never implemented and was transferred to another district. A more relevant development initiative to this research project is the campaign against HPAI in Cambodia where the HPAI term used was different from the one used by farmers, details of which will be discussed later and in the succeeding chapters (Hickler, 2007).

Another field that has influenced animal health communication is that of public health communication (PHC). The implementation of recent animal health communication strategies almost worldwide was based on some public health communication strategies because of the zoonotic nature of the diseases being addressed, for example, Severe Acute Respiratory Syndrome (SARS), which was believed to have been contracted from animals (S. Burgos and Slingenbergh, 2011), and HPAI, contracted from HPAI-infected birds. The following section discusses the frameworks and models that govern public health communication, which, in turn, have influenced AHC strategies.

2.2.3 Public Health Communication and Animal Health Communication

The fields of public health and animal health are inextricably related, so that research studies in both fields complement each other (Bonvicini and Keller, 2006). For this reason, it is appropriate to examine how public health communication has influenced animal health communication. The relationship between these two areas of communication has become particularly apparent after outbreaks of the new and emerging zoonotic[6] diseases: SARS, HPAI and Bovine Spongiform Encephalopathy (BSE). One research topic from medical science, which is now slowly attracting some attention in veterinary medicine, is the role of communication in achieving positive health outcomes. One of the most serious efforts to examine the role of communication in the veterinary field was made by Bonvicini and Keller (2006), but there were also other studies in developed countries that focused on veterinarian-client relationships (Mills et al., 2006; Sasidhar, 2002). An outcome of research in human

6 Disease that can be passed between humans and animals.

medicine showed that improvement in clinician-patient communication resulted in improved health outcomes (Bonvicini and Keller, 2006). Similarly, an improvement in communication skills promoted better understanding among animal owners and, consequently, resulted in better animal health. While the link between the veterinarian-client relationship and animal health outcomes has not yet been studied extensively, Grave and Tanem (1999, as cited in Bonvicini and Keller, 2006) note that some studies have shown that increased time with clients was a factor in improved adherence to medical regimens. Based on these findings, veterinary students and professional veterinarians were trained and re-trained, respectively, on improving veterinarian-client relationships (Grave and Tanem, 1999 as cited in Bonvicini and Keller, 2006). It is clear that the need to improve communication skills among veterinarians is increasingly recognised. This is a step towards increasing the emphasis on the positive role communication plays in improving animal health. However, the improvement of communication skills among veterinarians is only part of communicating animal health issues as other elements also impact on the outcomes of AHC.

Alders and Bagnol (2007) also acknowledge the need for better communication in animal health and emphasise the need for professional communication assistance in implementing animal health communication activities. There is limited literature on AHC and from the few studies that have been reviewed, the need to rethink the ways activities in the field are implemented has emerged. Hickler (2007) demonstrated in his study of HPAI in Cambodia that there was high public awareness of this disease but there were continuing risk behaviours practised among farmers. Hickler suggested the inclusion of grassroots stakeholders in animal health communication activities to overcome these problems. Achieving mutual understanding between all stakeholders within an animal health programme appears to be a new approach in animal health although "communication" has long been used in animal health; it has been used primarily for educating farmers and most often used only for disseminating information. Some animal health communication practices share strong affinity with agricultural extension tenets, that is, simply to educate and inform only. Efforts to "empower" stakeholders have become a factor only in recent years (Baggott and Smolak, 2010; Capua and Alexander, 2006; Catley and

Croxton, 2001). Empowerment of stakeholders has long been one of the primary goals in public health where communication figures prominently in almost every strategy.

Public health communication is a field that has evolved over the last three decades. It has focused on "solving health care and health promotion problems" (Kreps et al., 1998, p. 1; Maibach and Holtgrave, 1995) and has become central in the operation of public health services. Bernhardt (2004, p. 2051) defines public health communication as the "scientific development, strategic dissemination and critical evaluation of relevant, accurate, accessible and understandable health information communicated to and from intended audiences to advance the health of the public". Nevertheless, public good services such as veterinary or animal health services communication activities seem to be used only as a means of prioritising emergencies, rather than being a key part of everyday animal health services. However, as discussed earlier, AHC is slowly evolving from being used as an education tool to that of a more dynamic aid in animal health services. There are some instances where public health communication strategies have been adapted for use in animal health programmes, but there has been limited evaluation to confirm their effectiveness (Alcos et al., 2002).

One of the many planning approaches that have been recommended for adoption in animal health communication by the Health Communication Partnership (HCP)[7] is the P-process. The approach has been designed to be used by people to promote positive change at three levels — within socio-political environments, in health service delivery systems and among communities and individuals (Health Communication Partnership, 2003). There are five steps contained in the approach and the analysis part of the framework has been placed far ahead of intervention. Within the framework, participation has been encouraged from the beginning and a capacity-building mechanism has been integrated. The last phase in the P-Process involves evaluation and re-planning, if necessary. If re-planning is ever required, the process commences from the strategic designing stage (see Figure 2.2).

[7] A research initiative by the Johns Hopkins Bloomberg School of Public Health, Center of Communication Programmes.

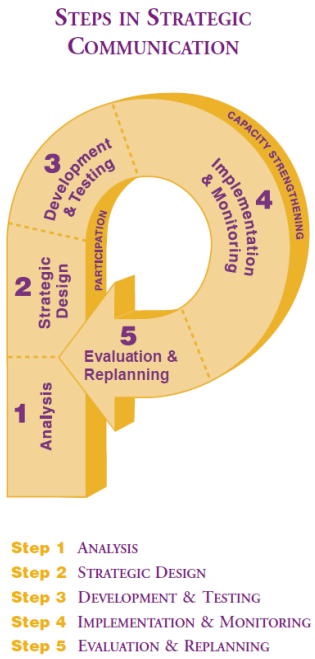

Figure 2.2 The New P-Process Health Communication Planning Framework (Source: Health Communication Partnership, 2003).

The FAO adapted the HCP P-Process as one of the frameworks for its communication for development programme (R. G. Alders and Bagnol, 2007). Alders and Bagnol (2007) specifically suggest the use of P-Process in animal health programmes(see Figure 2.3). They recommend the adaptation of this framework for service delivery systems, when communicating with communities and individuals and make some specific suggestions as to how communication materials should be developed using this framework. The authors acknowledge that there is a need for participatory approaches from planning to evaluation but also express concern about the cost of trying to communicate properly with grassroots stakeholders. They contend that any strategy must be sustainable, or able to be continued, even in the absence of foreign or private resource support.

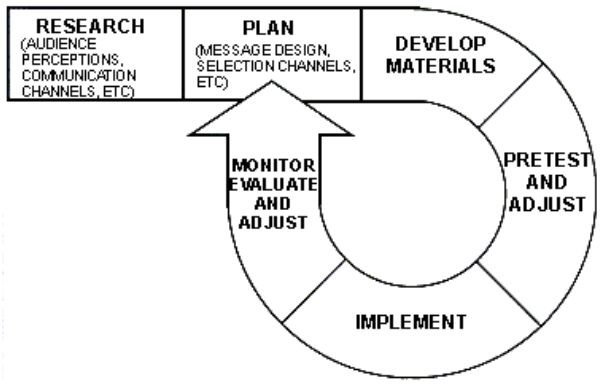

Figure 2.3 P-process as adapted by FAO (1989).

There are a lot of challenges in communicating animal and public health concerns. However, I believe that inefficiencies tend to occur more in AHC in terms of arriving at a mutual understanding with stakeholders. Some farmers and traders tend to have low regard for the importance of animal health (Llarena, 2006). While there is a belief that farmers tend to treat their animals as part of the family, animals are still regarded as property that can be replaced. The prevailing assumption is that most farmers would still rather sell their sick animals to recoup any investment than try to treat their animals or invest in biosecurity measures, which may explain the continuing prevalence of TADs in the region. Most farmers, especially those who are resource poor, are vulnerable to this practice because of their dire need for money for food and/or education. In addition, the current framework for animal health programmes in the GMS, if not the whole of Southeast Asia, does not allow for reasonable investment in communication activities. Officially, member countries of the SEACFMD Campaign have acknowledged the importance of communication in veterinary services (OIE, 2007b) but ineffectiveness in communicating animal health concerns was recently noted, especially with HPAI (CARE International Vietnam and Quality of Life Promotion Centre, 2005; Caro, 2006; Hickler, 2007).

In 2001, the OIE commissioned an inquiry into communication, which resulted in the initial definition of AHC (Grégoire, 2001; OIE, 2002). Grégoire (2001) reported to the OIE General Assembly that "communication management" had the potential to assist the delivery of veterinary services around the world. At that time, participatory approaches were not part of the

OIEs animal health communication, but it was envisaged that communication management would "become one of the priorities of veterinary services" (OIE, 2002, p. 43). Further, communication management would be used as an approach whereby epidemiological surveillance, risk management, emergency response activities, information and the involvement of livestock producers and consumers would be reinforced (Grégoire, 2001; OIE, 2002). The OIEs vision of communication management was detailed in a series of recommendations, but there were no specific guidelines for implementation of the plan within countries. Llarena (2006) also noted that veterinary services, surveyed around the world within the OIE study, made limited use of communication in their activities. Commitment to prioritise communication activities among member countries began to be officially obtained from 2000 but such activities remain vague and unsupported. The Philippines, in particular, adapted a communication management approach in communicating animal health (Alcos et al., 2002).

Mercado (2000, p. 144) defined communication management as "the process of researching, planning, staffing/organising, directing/coordinating and monitoring and evaluating programmes or projects designed to create effects and impacts on certain audiences." Mercado introduced the development management model as a framework for communication management based on five functional steps described in his definition above. He claims that the basis for planning is "primary social research data" that includes knowledge, attitude, practices and skills of the "beneficiaries." "Intuition and common sense are only supplements to data," he wrote (Mercado, 2000, p. 147). In retrospect, as part of the communications team of the National FMD Task Force (NFMDTF) in the Philippines, there were field realities that this framework was not able to capture such as the participatory nature of the communication activities that we did in the field. The framework for communication management generally remains an "imposed" or a top-down intervention while the conceptualisation of AHC, as it was first practised in the Philippines, was participatory in nature. For this reason, the FAO communication for development framework may work well as a guide in communicating animal health.

The FAO described two phases in communication planning, the second stage in the P-process that was presented earlier. The first phase was Participatory Rural Communication Appraisal (PRCA) (Anyaegbunam et al., 2004). PRCA is both a methodology and an approach which "aims at empowering the marginalized by involving them as coequal partners in communication research that helps them to define and shape their own livelihoods and realities" (Anyaegbunam et al., 2005). A number of participatory tools such as communication resource maps, focus group discussions, linkage diagrams, transect walks and other tools are used in this approach that could help in defining the communication problems and needs of a community. The PRCA is a multi-disciplinary approach to solving development issues. It involves a number of stakeholders, just like other participatory approaches; however, it is unique because the researcher and stakeholders arrive at a mutual understanding in the process. The PRCA allows a holistic investigation of the characteristics of the community. Such a holistic approach enables any researcher to properly connect with the community or stakeholders by understanding their values, norms and aspirations. A PRCA specialist has a number of tools to enable him/her to understand the characteristics of stakeholders using the tools mentioned earlier. PRCA also allows the use of indigenous communication media already in use in the community. Ideally, the PRCA is coupled with a survey on awareness, knowledge, attitudes and practices (AKAP) to serve as a baseline in the next phase of the communication framework.

The second phase of communication planning is Participatory Communication Strategy Design (PCSD). PCSD follows PRCA and the baseline survey. PCSD is designed to include various stakeholders in the planning and design of the communication strategy for any development issues such as poverty alleviation, gender, TADs and livestock (Mefalopulos and Kamlongera, 2004a). One of the unique features of PCSD is the high involvement of the stakeholders in the planning and design of the communication media and strategy. Among the things that are intensively revised and finalised include the activities needed to achieve the intended outputs, inputs required to implement the planned activities, and work plans. Materials are meant to be extensively pre-tested before their mass production.

An outline of the FAO basic communication strategy design described by FAO is listed as follows (Anyaegbunam et al., 2004; Mefalopulos and Kamlongera, 2004a):

- Review the project framework.
- Carry out the participatory research in the field.
- Analyse the field research findings and identify the focal problems.
- Identify and draw the profiles of priority interaction groups.
- Define short, manageable, achievable, realistic and time-bound (SMART) communication objectives and solutions.
- State the rough content of the issues related to the focal problems and SMART objectives.
- Select the message design
- Define the communication approaches and methods
- Develop the creative design of discussion themes and messages.
- Select the media and finalise the message design.
- Revise and define the overall communication approaches and outputs.
- Revise and finalise the activities needed to achieve the intended outputs.
- Revise and finalise the inputs required to implement the planned activities.
- Assemble and review the work plan for the implementation phase.
- Develop the communication materials.
- Pre-test and review materials.
- Supervise mass production of communication materials.
- Train trainers on relevant issues and materials.

- Supervise the implementation of activities.
- Supervise the monitoring and evaluation.

Given that stakeholders are genuinely involved, this strategy may potentially be useful in any developing country because it addresses a number of issues from the review of the monitoring and evaluation framework. The development of communication messages that are finalised only after mutual agreement is achieved through pre-testing and reviewing of materials.

Another alternative to PCSD is the "comprehensive participatory planning and evaluation (CPPE) approach." Just like PCSD, CPPE requires high participation from the community and is a flexible approach. However, it is a highly iterative process, meaning the analysis of a problem is repeated until stakeholders can think of no further possible solutions[8]. CPPE uses the causal model: inputs, processes, outputs and outcomes (HIPPOPOC) table together with the dynamic model in identifying problems and possible solutions (LeFevre et al., 2000). Parties attempt to reach a mutual agreement on how a problem could be solved in a sustainable manner based on a number of options.

The implementation of PRCA, PCSD and CPPE initiatives require experienced facilitators, which entails costs. The framework has been implemented in FAO-supported development projects in Africa, but a full-scale PRCA and PCSD approach in development projects has yet to be implemented in Southeast Asia, especially in the GMS countries.

The OIE is in the process of adopting communication as part of the terrestrial animal health codes, which is the animal health standard worldwide. This means there would be standards in implementing communication programmes for animal health for OIE member countries. The OIE Code serves as a guide for member countries in the implementation of certain activities such as trade, animal movement management, and regional animal disease reference laboratories. An ad hoc group on communication was established to refine terminologies and concepts in communication and their applicability in the Code (OIE, 2008). The OIE (2008, p.

[8] The process could be likened to a brainstorming session.

3) explained that "the full integration of communication into the Code will be the effective mechanism to create the necessary incentive for countries, ministries to incorporate communication strategies within animal health policies." This also shows that member countries of the OIE acknowledge the importance of communication and the ineffectiveness of previous strategies to integrate communication in the current animal health framework.

As a policy-guiding body, the OIE experts proposed to member countries that AHC strategies should be drafted within the context of One World - One Health™. The aim of the One World – One Health™ initiative is to apply a holistic approach to preventing and/or controlling epidemic or epizootic diseases (FAO et al., 2008). Experts from various fields in both animal and public health will participate. One of the most recent AHC strategies that OIE endorsed had five goals (OIE, 2009). The first goal ensures the evolution of communication strategies and approaches that are fully integrated with policy development and programme delivery of veterinary services. The second goal is to improve risk communication approaches, both prior to, and during an emergency. The third goal is the improvement and strengthening of communication resources such as staff capacity and capacity building; and the improvement of national coordination across various sectors and stakeholders is the fourth goal. The last goal is the sharing of information about internationally relevant animal health issues and communication approaches within the region and globally.

2.3 INVESTIGATING COMMUNICATION

Communication is a complex process and research is what demystifies it (Frey et al., 1991). It is because of this complexity that I have decided to use both qualitative and quantitative approaches in this research to address the shortcomings of each approach to investigating and evaluating communication. This research will be mainly a qualitative investigation because the few evaluation studies on communication on TADs have mainly been quantitative in nature. Qualitative approaches sometimes lack the replicability of quantitative investigation, but they have the ability to better explain the correlation between variables and give a richer perspective in various investigations (Daymon and Holloway, 2002; Sarantakos, 2005; Strauss, 1987;

Trochim, 2006; Walliman, 2006). Qualitative approaches are also flexible compared to quantitative, which are fairly inflexible (Mack et al., 2005). Neuman (2000, p. 123) summarised the differences between the two approaches and these are summarised in Table 2.1.

Table 2.1 Differences between Qualitative and Quantitative Approaches

Quantitative	Qualitative
Test hypothesis that the researcher begins with	Capture and discover meaning once the researcher becomes immersed in the data
Concepts are in the form of distinct variables	Concepts are in the form of themes, motifs, generalisations, and taxonomies.
Measures are systematically created before data collection and are standardised	Measures are created in ad hoc manner and are often specific to the individual setting or researcher
Data are in the form of numbers from precise measurement	Data are in the form of words and images from documents, observations and transcripts
Theory is largely causal and is deductive	Theory can be causal or non-causal and is often inductive
Procedures are standard, and replication is assumed	Research procedures are particular, and replicability is rare
Analysis proceeds by using statistics, table, or charts and discussing how what they show relates to hypotheses	Analysis proceeds by extracting themes or generalisations from evidence and organising data to present a coherent, consistent picture

I will give an overview of the characteristics of both approaches in the following sections but will discuss the ontology and epistemology governing this research in the next chapter. The quantitative and qualitative methodologies are significant to this research because both complement each other. The quantitative phase of this research may yield specific numerical results about the number of study participants that are aware of a certain TAD but the information may not be enough to explain why. The qualitative phase fills the gap that quantitative approaches may not be able to complete.

2.3.1 Quantitative Methodology

Quantitative methods are guided by positivism. Positivism is an objective approach to testing theories where methods can be replicated for verification of findings and there are sets of rules for investigation. Neuman (2000) calls this 'reconstructed logic' - where it is possible to follow instructions as to how a quantitative investigation should proceed. Most of the time, the research questions of quantitative research studies come from the researcher: they are, therefore, the experts. Results from a quantitative research are, most of the time, applicable beyond the

study sample size. Data analysis in quantitative research is more mechanised in that it is encoded into a computer-based or devoid, as much as possible, of human intervention (Neuman, 2000; Sarantakos, 2005). It also follows that integrity of the research lies in the precision of an objective technique such as a laboratory equipment, measurement or statistics.

2.3.2 Qualitative Methodology

Qualitative methods, on the other hand, are guided by interpretivism where the success of research hinges on revealing interpretation and meanings (Neuman, 2000). Qualitative research also bears the same rigours of a quantitative investigation; however, qualitative researchers apply "logic in practice" (Neuman, 2000). Qualitative methodologies may lack the standards or order that quantitative researchers would look for in methodologies such as straight-forward procedures or objectivity but qualitative methodologies do not lack validity in the same way as quantitative research studies (Morse and Richards, 2002; Sarantakos, 2005; Strauss, 1987). Research questions usually originates from the people being studied (Neuman, 2000). Integrity in qualitative research studies lies in the researcher's rigorous processing and analysis of the data. Neuman (2000) hold that qualitative researchers have a number of ways to ensure the integrity of data gathered through triangulation and verifying of statements from participants of the study.

2.3.3 Evaluating Communication Campaigns

There are a lot of challenges in evaluating communication campaigns because of the numerous aims that most communication campaigns aim to accomplish. While the most common aim of communication campaigns is to change behaviour, most also aim to change policies (Coffman, 2002; Owl Research and Evaluation, 2008). Aiming to change behaviour and policies is the way most communication campaigns try to address vertical and horizontal communication challenges, which often lead to difficult ways of evaluating communication campaigns. Coffman (2002) lists the following challenges in evaluating communication campaigns: horizontal and vertical complexity; the unpredictable nature of the "intervention"; context and confounding

influences; access to appropriate control and comparison groups; lack of knowledge or precision tools; and, lack of the necessary tools. I will explain briefly these challenges below.

Most public communication campaigns aim to include everyone's point of view that there are efforts to address the vertical and horizontal communication (Coffman, 2002). The vertical communication being the engagement between the management and the grassroots while the horizontal communication being the engagement between organizations (Bernhardt, 2004; Colle, 2008; Craig and Muller, 2007). The difficulties of including the views of all stakeholders on a certain project may have prompted how communication campaigns are implemented. Most communication campaigns concentrate on either a purely vertical or horizontal communication to enable simple evaluation strategies, especially in behaviour change communication campaigns (Waisbord, 2001; Waisbord et al., 2008). Other researchers addressed the difficulty of communicating to a number of stakeholders by employing participatory approaches in evaluating communication campaigns (Anyaegbunam et al., 2004; Inagaki, 2007; Mefalopulos, 2003, 2008).

"Interventions" are solutions designed to address communication problems. Coffman describes the nature of "interventions" as unpredictable, which is the reality in most development projects (Coffman, 2002). He explained that most development projects rely on donated resources, which does not have the same priority as paid campaigns. From my experience as a development communicator in the Philippines, we used to negotiate with government radio and television station managers for air space for public service announcements or messages. This meant that there were no assurances that public service announcements or messages would be aired or given prime air time. This is a common situation regardless whether the organisation negotiating for free air space is a government or non-government organisation.

The context and confounding influences surrounding certain communication campaigns also make evaluation a challenging task. Coffman (2002) argues that communication outcomes are difficult to isolate and evaluate because of the number of influences and the context of each

campaign. Most recently, however, researchers found that the most common factors affecting behaviour include intention, environmental constraints, skills, attitudes, norms, self-standards, emotion and self-efficacy (Pollock, 2002). Pollock (2002) describes intention as "a commitment to perform" the behaviour while environmental constraints as the possible hindrances to doing a certain behaviour. She also describes skills as the abilities to perform the behaviour, attitudes as the belief about doing that behaviour and social norms as perceived social pressure to perform a behaviour (Pollock, 2002). Self-standards are the consistent comparison of performing behaviour with self-image. Emotion pertains to the reaction to performing behaviour while self-efficacy is one's perceived capacity to perform a behaviour. Context must be carefully considered in the implementation of communication campaigns. As I will show in this research, a campaign to curve animal movement inadvertently encouraged it because the strategy of imposing stricter requirements prompted animal traders to skip them to reduce cost and avoid red tape.

There is also the difficulty in evaluating a sample group to a "control" group. Whether a researcher is using an experimental or quasi-experiment research design, there is no way of knowing whether the results of the study were a direct result of the communication campaign (Coffman, 2002). It follows, as Coffman (2002) explains, we still lack knowledge on exact measure of communication campaign outcomes or tools to evaluate communication campaigns. Evaluation may not be a clear-cut science but its design is negotiated with sponsors and other stakeholders to ensure that questions surrounding the programme are answered (Rossi et al., 1999). In the same way, I negotiated the terms of this research with stakeholders in the selected countries to assure everyone that the outcome will benefit everyone. By using a number of approaches, that is quantitative and qualitative approaches, I used rigour to investigate and evaluate communication about TADs.

2.4 CONCLUSIONS

The complexity of communication has yielded a number of specialist fields in the past few decades. I have also found in the review of literature that communication campaigns have often

failed in the past due to the use of top-down approaches. There is evidence that development communication may be the key to more effective communication campaigns. To address the complexity of communication, I found that qualitative and quantitative approaches can be usefully employed in a complementary manner. Therefore, I employ both approaches in the investigation and evaluation of communication about TADs.

I will continue in the next chapter by discussing the details of the development of the methodology and tools considered for use in this research.

CHAPTER THREE
RESEARCH DESIGN

The role of communication in development was highlighted in the previous chapter. Despite the apparent importance of communication in assisting development initiatives, communication remains a challenge, particularly in the animal health sector. My study aims to investigate and evaluate communication about TADs to find out why the inefficiencies exist. I have employed a combination of qualitative and quantitative approaches for this research and I envisage that results from this research will become the basis for guidelines in the implementation of animal health communication programmes in the future.

This thesis is primarily qualitative in approach despite the use of quantitative tools in the initial phases of the research. This chapter details the overall methodological framework used in the study. The methodological framework applies to the different phases of this thesis, which I will detail later. The specific methods used in each research phase will be detailed in relevant chapters.

3.1 INTRODUCTION

This research involved the use of qualitative and quantitative tools to investigate and evaluate animal health communication in three countries in Southeast Asia. I will provide further details about the research settings, participants involved and associated ethical considerations as well as identify the potential limitations and biases of the project.

3.2 RESEARCH APPROACH

The research involved three phases, which are summarised in Table 3.2. The first phase (Chapter 4) involved a survey containing questions that helped ascertain the knowledge, attitudes and practices (KAP) of farmers, traders and animal health workers. The aim of the

KAP survey was to understand the status of AHC activities in the field and to provide baseline data on the effectiveness of communication campaigns for CSF, FMD and HPAI. An exploratory field study (Chapter 5) was conducted and the data used to establish the initial themes and categories of the research and to test qualitative tools for use in the main field study. The main field study was designed to investigate communication at the village level and evaluate the FMD and HPAI communication campaigns in selected GMS countries. The aim of the main field study (Chapters 6 and 7) was also to validate the emerging themes and categories identified in the exploratory field study. The literature was also reviewed throughout the research project to assist in the verification of the field findings. Details of the data processing and analysis techniques used are provided later in this chapter. All materials were pre-tested in-house meaning the national project coordinators were consulted and were asked to pre-test them in the field. The time required to conduct the interview was discovered during the pre-test. I was only assigned one assistant who acted as my liaison officer, translator and, sometimes, group facilitator. The national project coordinators were informed that there is a need to separate the men and women during the FGDs. As much as possible, a female staff was allowed to accompany during one of the field investigations. However, most often, the national project coordinators assigned a male assistant to accompany me during the field studies.

Table 3.2 Research phases, focus and aims

Phase	Focus	Data	Aim
KAP survey (Chapter 4)	Assess the knowledge, attitudes and practices of farmers, traders and village animal health workers in Cambodia, Lao PDR and Vietnam	Descriptive data relating to demographics and communication in the research sites	1. To collect baseline data about the research settings and the study participants
Exploratory field study (Chapter 5)	Identify emerging categories or themes in the field (Cambodia, Lao PDR and Vietnam)	Interviews and focus group discussions (animal health workers, traders and farmers)	1. To provide qualitative data; and 2. To test qualitative tools for research on animal health communication in the selected GMS countries
Main field study (Chapters 6 and 7)	Further and in-depth investigation of the categories or themes (Cambodia and Lao PDR)	Interviews, field notes, case studies and FGDs	1. To understand the practice of animal health communication at the village level; and 2. To evaluate the effectiveness of HPAI and FMD communication campaigns at the village-level.

3.2.1 Research Setting

The areas covered in this research are the priority areas of the Food and Agriculture Organization of the United Nations (FAO) Project entitled "the control of TADs in the GMS" that is, the areas within the Upper and Lower Mekong regions in Cambodia, Lao PDR and Vietnam. The specific areas considered in this study included Northern Lao PDR and Northern Vietnam in the Upper Mekong region. The provinces in Lao PDR included Xayaburi, Oudomxay, Louang Prabang, Houapanh and Phongsaly (See Figure 3.5). In Vietnam, provinces were Lai Chau, Dien Bien and Son La (see Figure 3.6). The Lower Mekong region included provinces in Cambodia such as Kampong Speu, Kampot, Kandal, Koah Kong, Phnom Penh, Prey Veng, Ca Mau, Preah Sihanouk and Takeo (see Figure 3.4). The Upper and Lower Mekong regions are also important areas for the OIE SEACFMD campaign because of the volume of livestock traded in these areas. Illegal livestock and livestock product trade is prevalent in these areas and has been practised for centuries. For this reason, TADs spread beyond national borders and are a constant concern to neighbouring countries. Cambodia, Lao PDR and

Vietnam also have experienced high numbers of human and animal fatalities from HPAI. Weak animal and public health infrastructure and systems in these countries (Capua and Alexander, 2006; Ear, 2009) have been exposed by these outbreaks. There is now a need to provide greater assistance to these countries to improve disease surveillance in both the public health and animal health sectors. The World Bank considers Cambodia and Lao PDR as low-income earning countries while Vietnam is a lower-middle income economy (World Bank, 2010a, 2010b, 2010c).

Figure 3.4 Map of Cambodia with location of the survey area circled in red (Central Intelligence Agency, 2011a; Maps.com, 1997a).

Figure 3.5 Map of Lao PDR with location of the survey area circled in red (Central Intelligence Agency, 2011b; Maps.com, 1997b).

Figure 3.6 Map of Vietnam with location of the survey area in the red circle (Central Intelligence Agency, 2011c; Maps.com, 1997c).

3.2.2 Participants

The participants in this research study included farmers, traders, village animal health workers, and national animal health officers (Table 3.3). There was no KAP survey done with the national animal health officers because stakeholders thought that a training needs assessment was sufficient instead of including them in the KAP survey. Their roles in the research varied from being participants in the transect walks and focus group discussions (FGDs) to being key informants in interviews. Overall, they will be referred to as study participants. Farmers rely on agriculture for a living and usually keep livestock for additional income or food sources. Some livestock traders are intermediaries for commercial traders. Commercial traders sell livestock to the market. Village animal health workers provide animal health and production services in villages and they work as volunteers or are locally employed. They are the frontline for national animal health programmes. The national animal health officers who coordinate foreign-assisted projects were participants in the main field study.

Table 3.3 Study Participants

Study Participants	Description	KAP Survey	Exploratory Field study	Final Field study
Village Animal Health Workers	Volunteers or government employees whose duties include the delivery of animal health services and other extension services such as livestock raising information among others	✔	✔	✔
Farmers	Farmers with livestock	✔	✔	✔
Traders	Livestock and poultry traders	✔	✔	✔
National Animal Health Officers	Project coordinators as identified by the partner organisation, FAO			✔

3.2.3 The Development of the Study Methods

A constructionist ontology and interpretivist epistemology guided the approach to this research. A constructionist ontology focuses on the belief that reality is socially constructed (Sarantakos, 2005). It means that the interaction between the members of that community shapes the reality of a community. This also means that knowledge about social phenomena is not fixed (Walliman, 2006). Put simply, one cannot assume that a definition of a concept in one community will be the same in another. It is therefore important to know how different people define their own 'worlds' in the context of their respective realities. All organisations and individuals must seek to understand the 'world' or reality of any community to succeed in the engagement of any stakeholder. This approach will enable any communication strategy to be developed and implemented in an acceptable and practical way for the stakeholders, meaning greater efficiency in terms of cost and resources. This is also applicable beyond designing communication strategies but could well be applied in planning and implementing developmental projects. This ontology guided the selection of mainly qualitative approaches in this research because the success of developmental projects, including communication campaigns, rests on the cooperation of communities. Communities will never cooperate with something that they do not understand (Anyaegbunam et al., 2004).

I have assumed an interpretivist epistemology that recognises the subjective nature of defining reality (Walliman, 2006). A further extension based on the latter epistemology is that there is not one source of truth; and that knowledge comes from multiple sources (Sarantakos, 2005). Thus, in parallel, I have tried to use multiple sources to verify the findings of my research by using series of research phases to verify that communication campaigns were inefficient. The use of a series of research phases in this study also qualifies as a means of data triangulation. The main aim of the KAP survey was to serve as a background to the research. Details of this will be discussed in the following chapter. To further verify the findings and give more meaning to the background information, the succeeding field studies used participatory tools such as FGDs, interviews and transect walks. These tools provided greater depth and understanding of the factors influencing communication.

A qualitative approach is flexible allowing researchers to pursue emerging themes or categories in research (Daymon and Holloway, 2002). This characteristic of a qualitative investigation fits well in countries in Southeast Asia where cultural diversity is prevalent and flexibility is a necessity. One of the main aims of the exploratory field study is to test qualitative tools for use in the field including some suggested by Hickler (2007) in an earlier study. The methodological framework developed by Hickler (2007) used participatory tools included key informant interviews, FGD and evaluation. He also used evaluative metrics, also known as "measures" or "key performance indicators" (Robertson, 2003), to assess the impact of HPAI communication campaigns. The details of the exploratory field study, which aimed to identify key themes for the research, are contained in Chapter 5. This research project did not aim for representativeness, but rather in-depth understanding. Therefore, about 15 participants were recruited in each village in the exploratory field study. More study participants were recruited in the main field study (Chapter 6).

A major influence in the data gathering and analysis during the qualitative phase of the research was grounded theory methodology. Grounded theory methodology is a constructivist approach with a positivist attitude (Sarantakos, 2005; Walliman, 2006). A constructivist approach adopts a belief that social variables interact constantly, thus there is a need to continually assess their relationships. There are procedures on how to conduct a grounded theory methodology (Babbie, 2010; Dick, 2005; Draucker et al., 2007; Haig, 1995; Neuman, 2000; Strauss, 1987; Walliman, 2006) but my status as a researcher with prior information of both the topic and the research sites created methodological issues that required careful attention. I did however use research and analytical approaches from grounded theory where relevant. These were complemented by a range of qualitative research methods. By using series of field study and iterations in data analysis, the research used a grounded theory "style" (Daymon and Holloway, 2002). The style adapted in this research is most commonly used in other qualitative approaches. However, the data were re-coded until categories were saturated or there were no more categories that could be identified from the raw data. A positivist attitude is taking an objective

attitude in analysing the data despite the "subjective" nature of a qualitative investigation. This was achieved by triangulation through the gathering of data from a number of sources.

3.2.4 Data Processing and Analysis

The unit of analysis in the KAP survey was the individual while the unit of analysis during the qualitative field studies was the village. Descriptive statistics were used in the KAP survey while a grounded theory methodology guided the analysis of the qualitative data. For the qualitative phase, I transcribed, when appropriate, and coded data gathered through transect walks, FGDs and key informant interviews. Transcribing and coding are general qualitative techniques; however, recoding and repeated categorising of transcribed data is based mainly on grounded theory methodology (Dick, 2005). Coding the data assisted in the managing and handling of data (Sarantakos, 2005). This enabled me to quickly access the data and find relevant theme headings for each part of any transcription. I have also reviewed, coded and analysed the data and re-coded again until all possible connections between themes or categories were exhausted or saturated. As mentioned earlier, saturation is achieved when a theory or hypothesis can explain itself or answer the research problem. The main aim of re-coding and re-categorising of the data is to establish a pattern from all the data and relate this to the literature. I also kept field notes, which I wrote soon after each field activity and these contained my reflections on field data gathering. I was able to revisit the circumstances surrounding the investigation by reviewing my field notes. I was able to further to contextualise any themes associated with the transcript in the same way. I wrote an expanded interview notes where interview transcripts were not available because of interpretation difficulties. The field notes and expanded interview notes were coded when necessary.

3.3 ETHICAL CONSIDERATIONS

This research project was approved by the Murdoch University Ethics Committee and complies with the National Statement on Ethical Conduct in Human Research of 2007 which is the university-adopted policy on ethics in human research (Murdoch University, 2007). The aim of the human ethics guidelines is to protect participants from harm and give the participants the

benefit of anonymity including the privilege to withdraw from the study at any time. Members of the human ethics committee approved a special consent arrangement, which is detailed in the following section, including other ethical considerations for this project.

3.4 DISCLOSURE AND CONSENT

I made full disclosure of my association with each government (Cambodia, Lao PDR and Vietnam) and any international organisation to study participants. I was accompanied by government employees, so this inadvertently identified me with the government in each country. I assured participants that the study was not commissioned by the government or international organisations nor were there any known risks associated with taking part. While there is relative freedom among the people in the countries considered in this research, there is sometimes mistrust between government and citizens. The national project coordinators (FAO project coordinators) in the Southeast Asian countries advised me that getting written consent from the study participants was culturally inappropriate. The majority of the possible study participants could not read or write, thus, I opted for oral consent, which was approved by the University Human Ethics Committee[9]. I obtained oral consent prior to any data gathering from the study participants. It was important for me to have full disclosure and ask for consent as a means of establishing trust with the study participants.

3.5 COMPENSATION

Hospitality is common in Asian culture. The people in the GMS are especially hospitable when it comes to visitors, whether local or foreign. It is the culture in these countries to reciprocate that hospitality to show respect and appreciation. The farmers considered the visit of the government animal health workers as compensation for participating in this research. In addition during the exploratory field study in Cambodia, 'in-kind' materials such as T-shirts, posters, leaflets, animal antibiotics, and animal vitamins were some of the items given to study participants. In all of the activities, the study participants were also provided with a light snack

[9] Human Ethics Committee Permit Number 2008/076

after a data gathering session. There were also instances when I and my team hosted the study participants to a lunch according to the customs of the country visited. This was another way for us to build rapport with the study participants.

3.6 POTENTIAL BENEFITS AND RISKS

The short-term benefit of this research to the study participants will not be immediately realised; however, it is envisaged that the farmers and traders will benefit from the possible improvement of delivery of animal health services in the countries surveyed in the future. The outcomes of the investigation on the social and cultural factors affecting animal health communication will in the long term be used to benefit a number of industry stakeholders through filling some of the gaps in the delivery of messages and services identified in previous studies.

The research field study would have been impossible if not for the assistance of national counterparts from the government in each GMS country. However, inevitably my association with government employees risked some of my perceived credibility as an objective investigator among grassroots stakeholders. It was also inevitable that illegal activities such as movement of animals and trade would be discussed during the investigation. There were concerns about the safety of the study participants if such information was divulged during the investigation. The endemic nature of animal diseases meant that the transboundary movement of animals was also culturally ingrained within the communities considered in this research. Thus, while animal health authorities informed farmers of the risk in moving animals illegally, there was no active strategy to prosecute traders practising illegal movement of animals.

The extensive nature of the research also meant that limited funding restricted the hiring of professional interpreters. The local counterparts recommended the interpreters who accompanied me in this field study. They were not familiar with social science research methods and were not professional interpreters; however, they were used to accompanying foreigners to remote areas. They had a good grasp of the local culture, language and political situation. They were also highly recommended in facilitating FGDs. However, the ability of the interpreters and

their lack of understanding of the process of data gathering might have influenced the data in some cases. Ideally, the interpreter would interpret what the study participants were saying almost verbatim and as close as possible to the context of the question. I debriefed each interpreter immediately after each FGD or interview to minimise misinterpretation and to ensure that we both fully understood the context of the study participants' answers. I recorded my reflections on these debriefings in my field notes.

3.7 FEEDBACK

Giving feedback is a sign of respect in Southeast Asia and most of the national counterparts involved in this research will expect at least some information on the progress of any initiative that was conducted in their country. My previous experience of working with the national counterparts made feedback easier. I have engaged in follow-up correspondence with national counterparts through email and phone calls as often as possible. I have also tried to ensure that interim research results were passed to study participants through the existing national network.

3.8 RESEARCH LIMITATIONS AND POTENTIAL BIASES

All research has its limitations. In this case, the research was conducted in remote parts of developing countries where logistics such as transportation and services can be very expensive. Also, qualitative research does not aim to be representative; thus, there should be caution about extending the findings beyond the groups involved in this study.

I also acknowledge that there were possible biases in conducting this research and I developed strategies to compensate for this where possible. My undergraduate and graduate training were in development communication, social change and development: this background influenced my views on implementing development initiatives. I adhere to the tenets of a participatory approach to social change and communication management, an approach which is reflected in my attempt to consult stakeholders with regard to their comments about the guide questions and procedures/methodology to be used within the project.

I was also involved in the development and implementation of the FMD Communication Programme in the Philippines and was one of the main proponents of the original communication plan that the SEACFMD Campaign adopted. I have also worked as a communications officer/consultant for various animal health projects in Southeast Asia, mainly with the Food and Agriculture Organization of the United Nations (FAO). I also had some experience working for the World Organization for Animal Health (OIE). This background was of benefit to the investigation as it enabled me to contribute valuable insights in both theoretical and practical terms.

I tried to promote a risk-free environment for the study participants; however, the national partners that were involved in the research were government organisations. Thus, there was some potential effect on the willingness of the study participants to express their opinion. The relationships among villagers and government employees differed in each country but the presence of government employees sometimes created unease among some study participants. This situation may have influenced villagers' perceptions of being able to speak freely. I tried to mitigate any possible bias in FGDs by talking with government employees in the team before the FGDs took place and reiterating the need for a relaxed environment for the study participants during the meetings. There was also the potential of people having biased opinion in favour of the government since the facilitators are government appointed. I am Asian and my approachable style might have made the study participants feel more comfortable. However, being male and a foreigner in the countries under study posed some problem for the data collection. For example, female villagers tended to speak little or not speak at all to men.

I will report on a communication survey of study participants from Cambodia, Lao PDR and Vietnam in the next chapter. The KAP survey is the first of a series of field studies that will enable me to further investigate what the participants of this study understand, feel and practice with regard to TADs.

CHAPTER FOUR
EXPLORATORY SURVEY OF SELECTED COUNTRIES IN THE GREATER MEKONG SUBREGION

In this chapter I will present results of a survey of the knowledge, attitudes and practices (KAP) in relation to TADs, including CSF, FMD and HPAI, of farmers and village animal health workers (VAHWs) in selected countries in the GMS in this chapter.

4.1 INTRODUCTION

This chapter aims to provide preliminary data on the effectiveness of the communication campaigns for CSF, FMD and HPAI. The factors identified in this phase provided background for the subsequent phases of this research. The farmers and VAHWs' level of awareness and knowledge on detection, prevention and management will be described, as will attitudes towards TADs, and practice-related factors. The national project coordinators were not included as respondents in this study because a training needs assessment had already been done. Another aim of the survey was to understand the stakeholders' communication preferences, specifically, the information they received, how often they received it and why. A broader context showing the way that animal health communication is used in the region, and providing some further identification of some of the important factors associated with communicating about TADs will be provided.

The aims of the KAP survey were to:

- Describe the level of awareness of farmers, traders and VAHWs; and,

- Collect information to serve as a background to the larger research project.

4.2 METHODOLOGY

The KAP survey formed part of the activities for a project funded by the Food and Agriculture of the United Nations (FAO) and ADB. FAO administered the project, the aim of which was to contribute to the control TADs in the GMS (Caro, 2006). At the time of the administration of this survey, serological surveillance and socio-economic studies related to this study were also being implemented by the FAO. The aim of the serological surveillance was to estimate the prevalence of FMD-affected villages and animals in the selected GMS countries (Tavornpanich, 2007), whilst that of the socio-economic study was to survey the socio-economic status of the participants. Both studies involved interviewing farmers about their farming practices and knowledge about TADs. It was practicable, therefore, to conduct the KAP survey simultaneously to save time and resources. Therefore, I and proponents of the serological and socio-economic studies agreed to develop a combined questionnaire, where related questions from both studies were integrated.

4.2.1 Measuring Instrument

A semi-structured survey questionnaire of 91 items was designed to assess the KAP and communication preferences of the target audiences. A semi-structured questionnaire is a combination of standardised questions with closed-format answers and open-ended questions that an interviewer can administer, depending on the flow of the interview. The questionnaire had five parts that covered the areas of socio-demographics, knowledge, attitudes, practices, and communication preferences.

The socio-demographics section of the questionnaire included general questions about household income, age, ethnicity, and other variables. Questions about awareness and participants' application of this to everyday farming life or in the case of the animal health officers/workers' implementation of animal health programmes were included in the knowledge section of the guide questionnaire. The guide questionnaire was designed to prompt responses about TADs. Some questions were multiple choice, while others were open-ended. Most of the questions focused on key clinical signs of TADs. The attitude-related questions were used to

probe participants' perceptions of animal health strategies and TADs whilst the participants' practices in farming and TAD control management, including communication media preferences were investigated in the practices section. There were also questions on the biosecurity measures used by the participants. Biosecurity procedures include strategies and tools used to prevent and/or control TADs affecting farms and livestock. These include procedures such as quarantine of animals, restricting visitors to the farm, using disinfection at the farm entrance/exit, treatment or vaccination of animals, and regular cleaning and disinfection of the farm.

4.2.2 Interviewers

In Cambodia, staff of the Department of Animal Health and Production (DAHP) were the interviewers while in Lao PDR and Vietnam this role was played by field officers or sub-district animal health staff. The latter had had little previous training in administering questionnaires or were not familiar with this research tool. Therefore, I briefed them on the questionnaire and trained them on how to conduct the interviews. The interviewers in Cambodia had some experience in conducting communication survey research and no further training was done. The national staff of DAHP administered the interviews as they had had previous training from international and non-government organisations. The interviewers in Lao PDR and Vietnam, however, were lower level staff.

In Lao PDR and Vietnam, I briefed the animal health workers on the content of the questionnaire and trained them to administer the questionnaire. The training focused on the content of the questionnaire and building the animal health workers' skills in interviewing or administering the questionnaire. The animal health workers involved in interviewing or administering the questionnaire had a dry-run of interviewing farmers where I identified possible problems in their skills and the quality of work. The national project coordinator (NPC) in each country then assigned local staff to supervise the encoding of the raw KAP survey data. I consolidated the data encoded from each country and analysed the results.

4.2.3 Sampling and Sample

The sampling method used for the serological survey, which was conducted simultaneously, was adapted for this study. The survey was conducted in the FMD-control zones in the Upper Mekong in Northern Vietnam, in Northern Lao PDR and in Southern Cambodia in the Lower Mekong. A two-stage sampling procedure was implemented. The first stage involved the random sampling of FMD-affected villages in the Upper Mekong Zone (UMZ) and Lower Mekong Zone (LMZ), while the second stage involved sampling of a random selection of farmers within villages (Tavornpanich, 2007). Fifteen provinces were surveyed in Cambodia, Lao PDR and Vietnam. The Cambodian provinces included Kampong Speu, Kampot, Koah Kong, Phnom Penh, Prey Veng, Sihanouk Ville and Takeo. Houaphan, Louang Prabang, Oudomsai, Phongsali, and Xayaburi were provinces surveyed in Lao PDR whilst those in Vietnam included Dien Bien, Lai Chau and Son La. To have a better understanding of the characteristics of each country, Table 4..1 shows selected indicators of livestock systems.

Table 4.1 Selected indicators of livestock system in selected GMS countries

Indicator	Cambodia	Lao PDR	Vietnam
Total livestock unit of FMD and HPAI susceptible animals[10]	3,095,000	2,085,000	12,976,000
Human Development Index[11]	0.568	0.534	0.691
Gross Domestic Product (GDP)[12]	US$10B	US$5B	US$97B
Agricultural GDP in proportion to total GDP	36.3%	NA	22.6%
Livestock GDP in proportion to Agricultural GDP	20.9%	14.3%	18.6%
WB Income Level Classification[12]	Low-income	Low-income	Lower middle-income
Major Farming System[12]	Subsistence	Subsistence	Subsistence
Adult literacy rate[13]	73.6%	73%	94%
Average number of VAHW per village	2	1	1

The KAP survey aimed to interview at least 400 farmers; all, or at least 70% of VAHWs; and all traders based in the area of the study of each country. A total of 2,491 respondents were interviewed (2289 farmers and 202 AHWs) between late March and early May 2006. The data

[10] Livestock unit: a reference unit which facilitates the aggregation of livestock from various species and age as per convention, via the use of specific coefficients established initially on the basis of the nutritional or feed requirement of each type of animal. Conversion Factors: Cattle (0.65); Buffalo (0.70); Sheep and Goats (0.10); Pigs (0.25); and Poultry (0.01) (EUROSTAT, 2011).
[11] A composite index measuring average achievement in three basic dimensions of human development—a long and healthy life, knowledge and a decent standard of living (UNDP, 2010).
[12] (Source: World Bank)
[13] Defined as the population age 15 and over who can read and write (Central Intelligence Agency, 2011d, 2011e, 2011f)

were validated and data with invalid answers were discarded. Finally, 2,266 completed questionnaires from farmers and 179 from AHWs were analysed. Table 4.2 shows the breakdown of respondents in each country.

Table 4.2 Respondents in each country

	Farmers		VAHW
	Male	Female	
Cambodia	258	142	67
Lao PDR	434	56	65
Vietnam	1916	350	47
GMS	2266		179

Villages or communes[14] were randomly selected. All the VAHWs or commune animal health workers (CAHWs) from the selected villages/communes were included as participants, while farmers were randomly selected from a list provided by the VAHWs/CAHWs. Data were analysed using descriptive statistics.

4.2.4 Potential Limitations and Biases

This survey used random sampling of selecting participants, regardless of sex. The official list provided in each country largely contained male names, indicating an unequal gender distribution among the participants of the survey. Also, the aim of the study was to interview farmers, traders and AHWs. However, there were no professional animal traders identified in the surveyed areas. The farmers claimed that they regularly traded their animals for income, so they were referred to as "farmer-traders" in this chapter and asked about their trading practices.

I trained the interviewers in this study but their inexperience might have contributed to some inefficiency in the survey. There was a high rate (10%) of incomplete questionnaires returned. Questionnaires with 60% or greater of the questions unanswered were discarded. The reasons for this lack of response could not be ascertained. Where data were miscoded, these forms were returned to the encoders for recoding.

[14] A **village** is the smallest administrative unit in Cambodia and Lao PDR while **commune** is the smallest administrative unit in Vietnam and consists of about 10 villages.

The national project coordinator in each country translated the questionnaire into the local language. The questionnaire was pre-tested in-house or among the national fieldworkers of the Ministry of Agriculture in each country. The questionnaire was revised to reflect the results of the pre-testing. The revised questionnaire was used in the training of the interviewers.

Communication research surveys such as the one described in this chapter are limited to reported behaviours only. As I have learned when I implemented this study, there is some discrepancy between reported behaviour, as what study participants described in this chapter, and their actual behaviour in the field.

4.3 RESULTS

Results in relation to the key factors surveyed will be discussed in the following sections. A summary of the findings at the regional level will be discussed first and then the country discussions will follow. Findings on farmer-traders followed by those on VAHWs will then be discussed. Lao PDR refers to its village animal health workers as village veterinary workers (VVWs) while Vietnam refers to its field officers as commune animal health workers (CAHW). For consistency, 'VAHWs' will be used to refer to volunteer field workers or para-veterinarians throughout the thesis.

Within this study, results of the socio-demographic survey found that the majority (93%) of the farmer-traders carried out subsistence farming. This underscores that the majority of the farmer-traders are poor. Between 1% and 30% of the study participants claimed to be members of an ethnic group in the selected GMS countries. Some of the study participants who claimed membership of an ethnic group did not identify their group. Only four participants in Cambodia said that they were members of an ethnic Muslim group. The researcher was told that this is an ethnic group and not merely a community affiliated to one religion. On the other hand, more than 10 ethnic groups were identified in the surveyed areas in Lao PDR and Vietnam. The ethnic groups identified in this field study included Hmong, Lao Lung and Lao Thung in Lao PDR; Muslims in Cambodia; and Thai Den, Xi Mun and Kinh in Vietnam.

4.3.1 Knowledge and Awareness of TADs and Their Control

I found from the survey results that despite the intensive public awareness activities in the region, there were only a few villagers who could be considered knowledgeable about CSF, FMD and HPAI. This means that overall and despite the public awareness campaigns focused on TADs (especially HPAI) and claims of awareness of TADs among the study participants in this chapter, knowledge of clinical signs of TADs and disease management in the GMS is low. While farmer-traders claimed they were aware of which TADs existed in the region, the proportion of participants in the three countries who claimed to be aware of clinical signs associated with specific TADs ranged from 10% to 58%. However, they were relatively more familiar with the clinical signs of FMD and HPAI. It is not known whether the participants were aware that HPAI and virulent ND have similar clinical signs. Awareness of the clinical signs of TADs is a first step to prevention and early response. However, if the farmer-traders have only a low-level knowledge of these clinical signs then the initiation of control measures may be too late to be effective. In Vietnam, most (49%-60%) of the participants of this study were able to identify correctly how TADs were transmitted, their clinical signs, control and prevention. In Lao PDR, only 12% of participants were aware of the clinical signs of FMD. Very few Cambodian participants were able to identify CSF clinical signs and only 16% of the participants claimed awareness of the disease. Participants from the three countries were asked to identify at least one biosecurity measure from four choices. Between 1% and 64% of the Cambodian study participants identified at least one biosecurity measure while there were only between 0.36% and 5% of the Laotian study participants who were able to do so. Between 0.14% and 24% of the Vietnamese study participants were able to identify at least one biosecurity measure.

4.3.1.1 Cambodia

About 71% of the farmer-traders believed that FMD could be transmitted by direct contact and through fomites (70%) and uncooked swill (68%). Fomites are inanimate objects capable of carrying infectious organisms or viruses from one point to another, for example, clothing, shoes, tyres or dirty tools. A third of study participants correctly identified that FMD can affect cattle, buffaloes and pigs; about 46% also identified goats and sheep as FMD susceptible species.

Farmer-traders claimed that FMD clinical signs included fever (74%), lesions (72%) and vesicles (21%). They deemed reporting and vaccination (76%) as the best FMD control and prevention strategy. Some farmer-traders avoided answering questions on HPAI (74%) and answers to questions about the disease's transmissibility, clinical signs, affected species, control and prevention (84%).

Despite ND being endemic in Cambodia, none of the Cambodian VAHWs had encountered HPAI during their service, but claimed to be experienced in dealing with FMD (100%), CSF (75%) and other TADs (81%). There was no information of ND outbreaks at the time of the survey. More than half (55%) of the farmer-traders claimed to be aware of FMD, while only a few said they were aware of CSF (16%). Forty-one percent of farmer-traders did not answer the question when asked whether they were aware of any TADs. All of the VAHWs were cognisant of FMD and 69% of CSF. Most (81%), claimed to be aware of other TADs.

Overall, the respondents had very low awareness of CSF as most (79%) of them avoided questions related to CSFs transmissibility, clinical signs, control and prevention. This low awareness may have been due to the similarity of clinical signs of CSF with those of other TADs. FMD is endemic in the survey area and all the VAHWs were able to correctly identify the disease's transmissibility through direct contact, fomites and uncooked swill, and the most susceptible animals to FMD: cattle, buffaloes and pigs. No respondent associated the disease with goats or sheep, which are also FMD-susceptible animals. The best method for FMD control and prevention according to Cambodian VAHWs is vaccination. Cambodian VAHWs affirmed that they knew that HPAI could be transmitted by direct contact or through fomites. However, they all failed to identify specific HPAI clinical signs, control and preventive measures. The study participants were probed on how well they knew TADs. Participants who claimed they were aware of TADs were also asked if they knew the clinical signs of the TADs. Those who claimed to be aware of TADs and their clinical signs were also asked if they were aware of the government TADs programme. It was important to know the percentage of the study participants aware of TADs, their clinical signs and the current government TADs

programme. If one of these factors were missing, the readiness of any farmer-trader or VAHW could be compromised. Figure 4.1 shows responses to the probing of study participants' awareness of TADs, their clinical signs and government programmes.

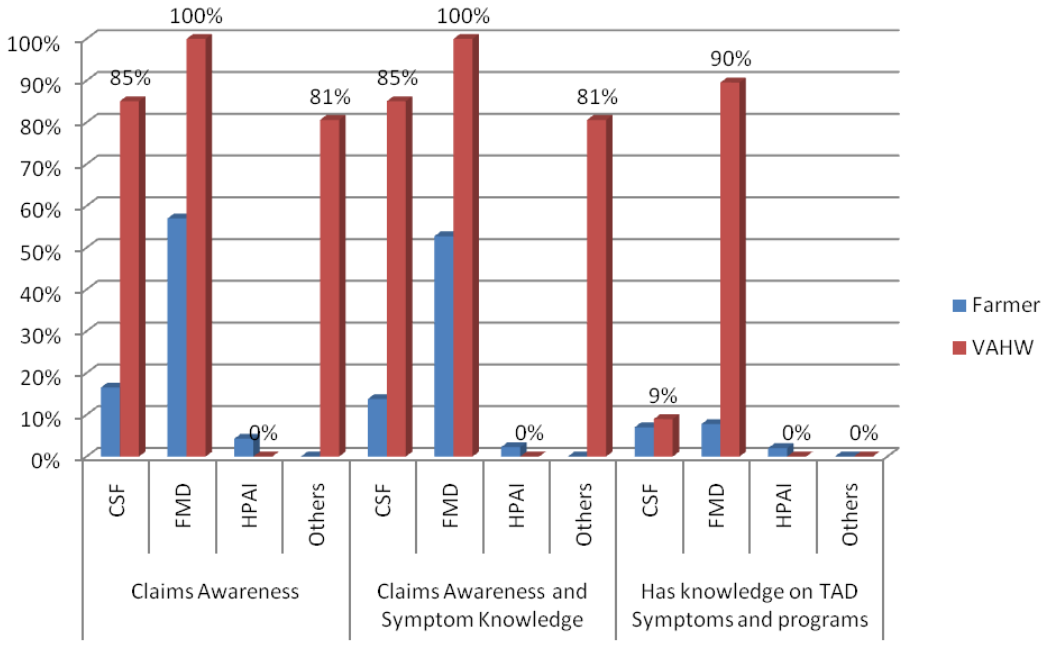

Figure 4.1 Cambodian study participants' awareness of TADs, clinical signs and government programmes

4.3.1.2 Lao PDR

Only 6% to 31% of the farmer-traders confidently claimed to have some awareness of at least one TAD surveyed for this study while 45% claimed no awareness of any TAD. There is low awareness among farmer-traders with few of them able to claim that they were aware of CSF (31%), FMD (12%) and HPAI (6%). The majority (84%) of farmer-traders could not confidently say that they were aware of any TAD clinical signs or formal government programmes aimed at raising awareness of animal diseases. Further probing also yielded no answer from farmer-traders from Lao PDR as about 84% to 88% of the farmer-traders did not answer any question on CSF.

In contrast, 69% of VAHWs were aware of CSF and that CSF could be transmitted by direct contact (77%) or through fomites (72%). Moreover, only a few recognised that clinical signs of

CSF included fever (48%), vomiting (9%), piglet mortality (34%) and diarrhoea (57%). They also believed that reporting (49%) and vaccination (51%) were the key strategies for CSF control and prevention. Most (45%) of the participants said they were not very familiar with FMD and HPAI. Study participants who claimed they were not familiar with FMD and HPAI (60% to 90%) did not answer the questions on FMD and HPAI transmissibility, clinical signs, control and prevention. Figure 4.2 shows a glaringly low awareness of TADs among study participants.

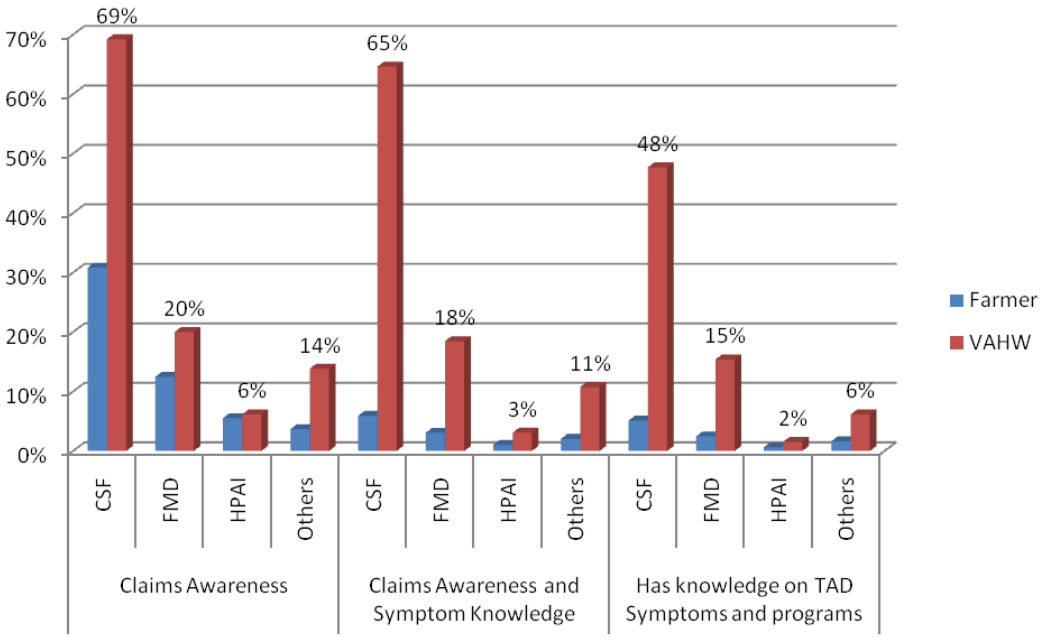

Figure 4.2 Laotian study participants' awareness of TADs, clinical signs and government programmes

4.3.1.3 Vietnam

Approximately a third (35%) of the farmer-traders claimed to have experienced a FMD outbreak while the others noted HPAI outbreaks (20%) and other TAD outbreaks (9%). About 23% claimed that they had not encountered any TAD outbreaks on their farms. About 65% of the farmer-traders claimed that they were aware of, or had heard of, FMD (65%), HPAI (63%) and CSF (58%).

The Vietnamese VAHWs had a lot of experience in dealing with CSF (60%), other TADs (60%) and FMD (49%). Most of them confidently claimed that they were aware of FMD (77%), CSF (68%) and HPAI (68%).

Both Vietnamese farmer-traders and VAHWs were familiar with CSF transmissibility. Around 67% of the farmer-traders claimed it could be transmitted by direct contact (72%) or through fomites (89%). They also identified uncooked swill as a source of CSF infection. The majority in both groups were able to correctly identify clinical signs of CSF, which included fever (84% farmer-traders; 94% VAHWs), diarrhoea (80% farmer-traders; 91% VAHWs), piglet mortality (61% farmer-traders; 94% VAHWs) and vomiting (31% farmer-traders; 40% VAHWs). They said that vaccination (90% farmer-traders; 94% VAHWs) and reporting (81% farmer-traders; 89% VAHWs) were the keys to controlling CSF.

There was also a thorough knowledge and awareness of FMD transmissibility, clinical signs, control and prevention among the participants among farmers and VAHWs. The majority of the farmer-traders reported that FMD could be spread through direct contact (86%), fomites (80%) and uncooked swill feed (63%). They also correctly identified cattle/buffalo (91%), pigs (90%) and goats/sheep (76%) as the most susceptible species to FMD and believed that vaccination (84%) and reporting (80%) were the best preventive strategies for FMD. Similar results were provided by the VAHWs.

There was also relatively good knowledge and awareness of HPAI among the participants. About half (52%) of the farmer-traders and three quarters (77%) of the VAHWs claimed that HPAI could be transmitted by direct contact, and 77% and 49% respectively through fomites. Both groups also knew that there was a need to properly cook poultry products to avoid HPAI in humans (76% farmer-traders; 85% VAHWs). The farmer-traders correctly identified HPAI-susceptible species such as poultry (78%), pigeon (68%) and other birds (71%). They claimed that HPAI clinical signs included depression (73%), death (73%), chick mortality (55%), production decline (48%), hyperactivity (46%) and diarrhoea (43%) and that vaccination (82%) and reporting (74%) were the best options for control and prevention. The majority of VAHWs were able to identify correctly HPAI-susceptible animals and HPAI clinical signs. They also believed that vaccination and reporting could help control and prevent HPAI.

Vietnamese respondents knew little about biosecurity measures used to prevent disease transmission such as setting up footbaths (16%); cleaning and disinfection (24%); and hand washing after tending the animals (13%). Figure 4.3 shows a rather consistent percentage of study participants aware of TADs, their clinical signs and government programmes.

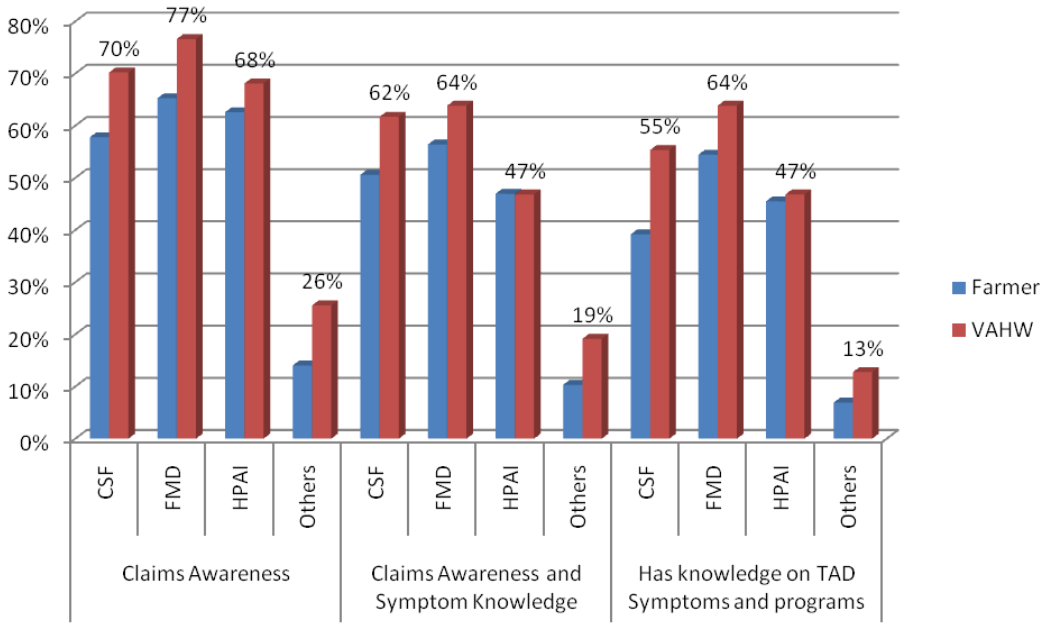

Figure 4.3 Vietnamese study participants' awareness of TADs, clinical signs and government programmes

4.3.2 Attitude towards TADs and their Control

While most (63%) farmer-traders in the GMS had little knowledge of what biosecurity was, they claimed that that it may prevent any occurrence of TADs on their farm. When asked whether they believed vaccination could prevent TADs, about 72% claimed (agree to strongly agree) that it could. However, most participants claimed that it was not an urgent matter to eradicate CSF, FMD or HPAI. Despite that, they acknowledged that these TADs needed to be controlled.

The study participants were asked whether they will be willing to participate in any of the government programmes. This question was used in an attempt to probe the feasibility of a participatory approach in animal health programmes and it yielded positive responses from the participants. There is a possibility that the participants may be willing to participate in the government programmes because of some personal interests. Some animal health campaigns

such as the collection of serological samples involve the distribution of tokens or gifts from the government. These tokens have taken the form of vitamins, medicine, feeds and health advice for participants' animals as well as such as T-shirts, posters and animal health manuals or information materials for the participants.

4.3.2.1 Cambodia

When asked whether they believe that biosecurity could help prevent TADs, the majority (63%) of Cambodian farmer-traders agreed that it could. Among the best TAD control and prevention strategies that farmer-traders identified included reporting (94%), public awareness (93%), cleaning and disinfection (93%), setting up proper animal housing (93%), and vaccination (93%). The majority of VAHWs (100%) and farmer-traders (94%) agreed that there was a need to control CSF, FMD and HPAI. They also agreed that cleaning and disinfection could help in the prevention of CSF, FMD or HPAI. Both VAHWs and farmer-traders were also satisfied with the government programmes on CSF, FMD and HPAI. Most (95%) of the farmer-traders also claimed that they would volunteer their animals for use in any government blood testing programmes for free.

About 75% of the Cambodian farmer-traders believed that washing their hands was a biosecurity measure. Only a few were able to identify that cleaning, disinfection and maintaining foot and/or wheel baths were biosecurity measures thus indicating that they had only a vague idea of what biosecurity strategies they could use. Most of them believed that biosecurity strategies were important to prevent CSF (78%) and HPAI (80%). Both VAHWs and farmer-traders agreed that there was no urgent need to control CSF, FMD or HPAI.

4.3.2.2 Lao PDR

The majority (84%) of the farmer-traders in Lao PDR did not respond to the questions about attitudes in the survey. These questions were designed to solicit the study participants' opinions on the need and urgency of control and/or prevention of CSF, FMD and HPAI; biosecurity against TADs; and the government TAD Programmes. Of the few who answered the

questionnaire, only 8% believed that TADs needed to be controlled while 7% believed that there was an urgent need to eradicate TADs.

In contrast, most of the VAHWs agreed that there was a need to control CSF (48%), FMD (31%) and HPAI (23%) and an urgent need to eradicate CSF (69%), FMD (33%) and HPAI (30%). More than half (60%) believed that cleaning and disinfection could help prevent CSF while 28% believed FMD and HPAI could be similarly prevented. Around 70% of the VAHWs were satisfied with the government's programmes (FMD, 42%; HPAI, 37%). Sixty-nine percent, 38% and 31% of VAHWs respectively, believed that biosecurity might help with the prevention of CSF, FMD and HPAI.

4.3.2.3 Vietnam

Most of the farmer-traders in Vietnam believed that biosecurity (79%) and vaccination (90%) could help prevent TADs. Reporting and vaccination were the most prevalent TAD control strategies among this group.

Most VAHWs and farmer-traders believed that there was a need to control CSF (91% and 96%, respectively); FMD (91% and 88%, respectively); and HPAI (94% and 90%, respectively). However, a similar percentage of VAHWs and farmer-traders believed that it was not an urgent requirement to eradicate CSF, FMD or HPAI.

Farmer-traders and VAHWs believed that cleaning, disinfection and implementation of biosecurity measures could assist in the prevention of CSF, FMD and HPAI. They were also satisfied with the government programmes provided for these three priority diseases.

4.3.3 Practices Relating to the Control of TADs

The majority (74%) of the farmer-traders in the GMS claimed that they would immediately report any TAD outbreak, while 48% of VAHWs said that they would immediately treat animals during any TAD outbreak. About 62% of the VAHWs said that they encouraged farmer-traders

to clean and disinfect to prevent any TAD outbreak. Farmer-traders commonly caged their animals. However, they also let some animals run free.

A little over a quarter (26%) of the farmer-traders sourced their animals from auction markets. However, the majority of the farmer-traders did not say where they sourced their animals as they may have sourced them illegally, such as from international sources when this was prohibited.

Farmer-traders raised livestock to assist with household income and for additional food source. They said that they usually sold their poultry, cattle and pigs when they needed cash. Nearly half (43%) of the animals were usually sold to professional traders.

4.3.3.1 Cambodia

Most (95%) of the farmer-traders in Cambodia said that they would first report TADs to the proper authorities. All of the VAHWs said that they first treated the animal whenever they were called to a TAD outbreak.

Farmer-traders in Cambodia used various methods for housing their animals, but the majority (70%) of livestock owners allowed their animals to roam freely. About 24% caged their animals. While there were many who failed to answer the question as to why they raised animals, one third (33%) said that it was for local consumption while nearly a quarter (23%) said that it was for the family's food supply. Participating farmer-traders usually sell their livestock as part of their household income. Some said that they sell cattle (34%) and pigs (27%) and chickens (16%).

4.3.3.2 Lao PDR

Most (84%) of the farmer-traders did not provide responses to questions regarding their first action during any outbreak of a TAD, information about their animal keeping practices, source of animals or animal disposal. Village animal health workers claimed that they would first report the outbreak to animal health authorities (46%) while some (28%) would treat the animals first.

Nine percent of the farmer-traders used their chickens for local or family consumption while other livestock were kept for income (49%). About 10% of farmer-traders claimed that they usually sold their pigs, cattle and poultry as part of their income.

4.3.3.3 Vietnam

Most (92%) of the farmer-traders in Vietnam claimed that they would first report any TAD outbreak. The VAHWs (96%) also claimed that they would also report any TAD outbreak as soon as possible. About 66% of the VAHWs claimed that they encouraged farmer-traders to clean and disinfect to prevent TADs.

Most of the farmer-traders (66%) usually kept their animals caged and sourced them from auction markets (41%). Farmer-traders usually raised poultry and cattle for income (42% to 46%) and local consumption (34% to 35%). Animals were sold for cash on an irregular basis.

4.3.4 Communication Preferences

When asked how they use the communication media such as television (TV), radio, posters and print (newspapers, pamphlets, brochures, etc.) that were available to them, about 60% of the participants claimed that they used different media channels for entertainment and to obtain news.

Respondents actively sourced news, especially about current events from either television or radio. The farmer-traders in the GMS largely preferred the radio as a source of news for TAD information. They said that they listened to news programmes usually once or twice a week (39%) while they used television and the radio daily for one to two hours. On the other hand, television was the preferred TAD news source among VAHWs. They listened or watched news programmes on a daily basis (44%) and used the radio (32%) and television (48%) for one to two hours a day.

4.3.4.1 Cambodia

Radio (96%) was the preferred means of communication for news about TADs. Farmer-traders claimed to obtain news from VAHWs and additional information on TADs from posters. VAHWs on the other hand sourced their news about TADs from television and radio. Respondents said that they listened to, or watched news programmes once or twice a week regardless of whether it was about TADs or current events. They also said that they used the radio and television from one to two hours a day.

4.3.4.2 Lao PDR

The media preference among the farmer-traders in Lao PDR was unknown as the majority of them (81%) did not respond to the relevant question. VAHWs usually received news on TADs via the community or word of mouth (34%); local radio station (29%); or from television (22%). A little more than half (51%) of VAHWs did not get news on a daily basis. They seldom used the radio (35%), but watched television (26%) for at least one hour a day. It was only in Lao PDR that there was a preference for word of mouth; study participants claimed that they would rather obtain information and/or news about TADs directly from the VAHWs.

4.3.4.3 Vietnam

Television was the preferred media for accessing news about TADs among farmer-traders (83%) and VAHWs (77%) in Vietnam. National radio (66%) was also a source of TAD news for farmer-traders in the survey area in Vietnam. Farmer-traders subscribed to news programmes everyday (47%) or once/twice a week (43%). Radio and television usage among farmer-traders usually ranged from one to two hours a day. On the other hand, VAHWs relied on other VAHWs, higher animal health authorities (94%) or television (83%) for news about TADs. They usually subscribed to news on a daily (47%) or once/twice a week (43%) basis.

4.4 DISCUSSIONS AND CONCLUSIONS

The implications of the findings in this field study are summarised and discussed in this section. The results of the socio-demographic survey confirmed earlier studies that the majority of

farmers in the GMS were resource poor (CARE International Vietnam and Quality of Life Promotion Centre, 2005; Siddiq, 2004). I was expecting to have more participants from some of the ethnic groups particularly in Lao PDR and Vietnam, but because most of them were located in remote areas their participation was limited. There are diverse ethnic groups in the selected GMS countries, especially in Vietnam. This diversity has implications for any public awareness campaign in any country. The presence of ethnic groups means that cultural sensitivity and language must be considered and any assumption about characteristics of the general public in the area might not hold true for ethnic group members.

The awareness level results from this survey may not be statistically significant but they are a good basis for any AHC campaign. The KAP survey results are similar to that of the communication evaluation studies (CARE International Vietnam and Quality of Life Promotion Centre, 2005; Hickler, 2007) in that there was a general awareness of TADs among farmer-traders, but risky behaviour continued. In this study, farmer-traders claimed awareness but this did not translate to knowledge, meaning that stakeholders may have been aware of TADs but may not have known how to control or manage them. They may be aware of the correct strategy to use but they may not have known how to use that strategy to control and manage TADs. For example, they may be aware that biosecurity is a correct strategy for protecting the animal but they do not know how to apply or use biosecurity in their farms or daily farming. This does not infer a need for behavioural change, but rather, a need to translate the awareness or information that they have into action. A good example where grassroots stakeholders have initiated to act on what they know is the outcome of the FAO project in Indonesia where project managers used participatory disease surveillance. Simply, the framework used the bottom-up strategy where strategies emanated from grassroots stakeholders (FAO, 2010). In doing so, project managers are almost certain that grassroots stakeholders understand and act on the purpose of the strategy.

Within this study, it was found that VAHWs in the GMS countries exhibited satisfactory levels of technical awareness. The VAHWs were mindful of the existing government programmes for

control of TADs such as CSF, FMD and HPAI. They were aware of the clinical signs of TADs, but they had a poor understanding of how to diagnose TADs, that is, they may have known what the clinical signs were but may not have been able to identify the disease in the field. Some of them had had long experience with TADs, while others had yet to see a case of CSF, FMD or HPAI, suggesting that there may have been a lack of training among the VAHWs.

Another finding from this study was the recognition by farmer-traders of the need to control and eradicate TADs but, ironically, a belief that there was not an immediate need to do so. This attitude towards TAD risk has some implications for strategies implemented by animal health authorities. The perception that the control of TADs is not that important poses a great risk to the early control and eradication of possible zoonotic diseases. Also, animal health authorities might be delivering services that farmer-traders perceive they do not need. Thus, farmer-traders might not heed any advice given, such as the cleaning of cages and/or restricting animal movement. The indifferent attitude towards TADs may also be due to a combination of factors including the high cost and lack of availability of vaccines and inability of small livestock holders to do anything to control TADs. The participants also had only a vague idea of what biosecurity meant despite some of them acknowledging or practising some strategies without knowing it. It cannot be concluded from this study whether the farmer-traders actually understood what biosecurity strategies were and what was available to them, or if they were just ambivalent about using such measures.

Practices described in this field study reveal the need to further investigate how farmer-traders understand and implement biosecurity measures. The practices described in this chapter are claims and needed to be investigated whether it is a tradition or an introduced practice. Understanding how they understand and adopted these strategies will make significant contribution to how animal health authorities and other stakeholders communicate with farmers and traders.

Participatory approaches in animal health may be new to both the study participants and animal health authorities. The study participants expected a 'reward' after any campaign activity and this may have been one of the reasons that the farmer-traders were eager to volunteer their animals for any future government animal health campaign. This outcome has some implications with regard to the feasibility of using participatory approaches within animal health programmes. If the study subjects expect a reward for their participation, a true participatory approach to animal health programmes and communicating animal health issues may not be achieved.

In terms of communication, it was found within this study that the participants trusted television and VAHWs as sources of information on animal health issues. They tended to use television or talk to VAHWs whenever they needed any information about TADs. Most respondents used different communication media for entertainment purposes rather than to obtain information about TADs, which has implications for any communication campaign in the region. This use of alternative media may present an opportunity or a challenge. UNICEF had used comic or cartoon characters in their information materials to explain risk and how to prevent HPAI. Most of the HPAI campaigns that UNICEF implemented in the GMS were based on an 'edutainment' approach where educational messages were used in various entertainment media such as soap operas, theatre, movies and music (Mefalopulos, 2008). Whether this strategy was effective is not yet known, but it is suggested, based on information obtained from this study, that edutainment may work since the study participants will learn while being entertained using various media, including television. Farmer-traders in Lao PDR and some parts of Cambodia subscribe to Thai TV suggesting it may be useful to develop a communication strategy in the Thai language that targets these farmer-traders.

The services of VAHWs were deemed important within this study, especially in exotic TADs such as the H5N1 type of HPAI. Capua and Alexander (2006) emphasised this by recommending the importance of collaboration with health related volunteers in situations such as an HPAI outbreak. The VAHWs role in this regard is important in ensuring that farmer-traders are engaged based on their language and culture. I also found that VAHWs lacked some

training in identifying TADs and managing them. The reason that VAHWs appeared to be one of the most trusted communication channels is that they are easily accessible to farmer-traders.

The general issues that resulted from this field study are as follows: low level of knowledge and awareness among farmer-traders, lack of training among VAHWs, risk perception among participants/attitude towards TADs (for example, the attitude of farmers that some TADs are not that important and their low perception of the risk that their animals will get sick because of some of their behaviours), dependence on vaccination as a solution to TADs and lack of understanding of the concept of biosecurity. These issues have been the subject of previous communication campaigns in the region.

I will explore these issues in more depth in the next phases of this research to gain a richer understanding of the biosecurity and communication issues that play a part in animal health programmes. I will focus on investigating how study participants understand and practise communication at the village level in order to describe AHC better.

CHAPTER FIVE
REVISITING THE GMS: FINDING THE RIGHT QUESTIONS

5.1 INTRODUCTION

The exploratory field study is described in this chapter. Issues that emerged in the KAP survey, as detailed in the previous chapter, are developed and new themes identified in this study. This field study was conducted between June and July 2008. Questions on how participants traded their animals, the frequency with which they did so and the role of each household member in the care of the animals were asked. Other questions posed included participants' communication preferences and practices. The aims of this exploratory field study were to:

- Evaluate instruments appropriate for use in the next phase of research;
- Gather information for use in the evaluation of communication campaigns for TADs; and,
- Identify the main themes for the next phase of research.

In the following section I present the methodology and instruments used in this exploratory field study. In the sections that follow I describe the participants and settings in this exploratory field study, and how I processed and analysed my data including potential limitations and biases. I discuss the results in the last section and highlight the themes I identified in this field study. In the previous chapter, I used the term "farmer-trader" to refer to a study participant who is engaged in agriculture, raises animals and regularly trades his/her animals. I did this because there were no available professional animal traders interviewed in the previous chapter. In this exploratory field study, there were professional animal traders who participated. From this chapter onwards, I will refer to study participants who are engaged in agriculture and raise animals as 'farmers' while animal traders who trade animals for a living as 'traders'.

5.2 METHODOLOGY

The findings in this exploratory field study provide a deeper and more qualitative investigation into the knowledge, attitudes and practices of the research participants. Iteration was used in the analysis of data in this research to arrive at conclusions in investigating and evaluating communication about TADs. As such, knowledge, attitudes and practices of the participants of this study were revisited but with the intention of identifying new themes for this research. The study participants in this field study included farmers, traders and provincial animal health officers from Cambodia, Lao PDR and Vietnam. Participants' profile and the survey areas are described in detail in Chapter 3. The transect walk and FGDs were conducted with the farmers and traders. The interviews with provincial animal health officers from the selected countries were usually held after the research activities at the village. Descriptions of the tools used with the participants in this field study are detailed in the next section. A government employee was appointed to accompany me in the field studies in Cambodia and Lao PDR. The employee was also my interpreter and facilitator during the FGDs. The government recommended interpreter in Vietnam was a private individual.

5.2.1 Instruments

The participatory tools used in this exploratory field study were transect walks, focus group discussions (FGDs) and key informant interviews. I will describe these tools, the justification for their selection, and the manner of their use in the following section.

5.2.1.1 Transect Walks

The aim of the transect walk was to provide a general overview of the characteristics of the village, illustrating factors in the environment or in the community that may contribute to the spread of TADs (Anyaegbunam et al.; Hickler, 2007). In this research, it was also used to establish rapport with the study participants and to improve understanding of specific animal health issues that affected each village visited, with a special focus on communication (Woods and Gilbert, 2006). This special focus on communication was important because transect walks are usually used to assess the environmental characteristics of an area but in this field study I

used transect walks as a means to assess the village's communication/information sources. I hoped that the environmental survey of the village could yield vital clues as to which was the most appropriate and practical communication medium for the villagers. Participants in the transect walk included representatives from the village's various socio-economic groups.

Conducting Transect Walks A theme guide was used as a discussion reminder for the walk. See Appendix 5 for an example of the theme guide and list of topics. I and the national and provincial animal health staff met participating villagers and briefed them on the aims of the activity. In finalising the route for the walk a map of the village was usually used. However, maps were not available for some villages and in some cases the village head had already identified a route for the activity. I briefed the participating villagers on their rights and any issues about their participation in the research. I also assured them that they were free to withdraw at any time. The walk proceeded only after agreement on the route and distance between my team and the villagers. The walk usually lasted around an hour and covered between 3 and 5 kilometres around the village. I noted various things in the village including the crops grown, soil type, animal movement routes and community billboards. I also looked for potential locations for communication media such as community towers or billboards. I or an assistant documented the walk by taking still photos and, whenever possible, recording conversations or taking notes. Non-participating villagers were also interviewed with regard to their TAD experience.

I asked the participating villagers to draw a map of their village with key landmarks such as grazing areas, billboards and waterways. I debriefed and consulted the team and the villagers after the walk. I summarised my observations and other findings and presented them to the participating villagers who were asked if they agreed with the observations.

5.2.1.2 Key Informant Interviews

Key informant interviews are especially helpful in identifying attitudes and behaviours of a community (Mack et al., 2005; Morse and Richards, 2002; Neuman, 2000). Topics discussed

during the interview included opinions on the animal health communication strategies, animal health policy in the country, knowledge of animal movement policies, assessment of animal movement in the country and disease status. I interviewed the provincial animal health officers for this aspect of this study.

Conducting key informant interviews. Interviews with the key participants were unstructured. This is a flexible format for data gathering, which allows the interviewer to vary the guide questions to obtain better insights from the interviewee (Walliman, 2006). I briefed the interviewee, through the interpreter, on the objective of the interview, their rights and any issues about their participation, including their right to withdraw at any time. The interview was audio recorded only after the interviewee gave his/her consent to the recording. The interview topic focused on the interviewee's knowledge, attitudes and practices in the management and policy for TADs. Most of the interviews lasted about an hour.

5.2.1.3. Focus Group Discussions

A FGD is a technique that reflects on the outcome of "communication between research participants in order to generate data" (Kitzinger in Priest, 2005). Body language and the way the participants interact tell a story in addition to what they are relating verbally. The dynamics within the groups were expected to reveal better understanding of the groups' knowledge and attitudes. The FGDs in this project focused on the farmers and traders' attitudes and practices with regard to CSF, FMD and HPAI.

Conducting focus group discussions. I prepared a topic guide including probing questions focused on the farmers and traders' knowledge, attitudes and practices with regard to CSF, FMD and HPAI. A group of six to ten farmers/traders were briefed on their rights, the objectives of the study, and asked for their consent to record the proceedings. For cultural reasons, and whenever possible, males and females were separated and were asked to select the location for the meeting. I was the moderator and note-taker during these FGDs. A government

appointed interpreter assisted in facilitating the FGDs. Most of the FGDs lasted between 1 and a half and 2 hours.

5.2.1.4. Field Notes

Anderson (1987) described field notes as the researcher's record of anything that was meaningful.

> The goal is not to record everything—that simply creates chaos—but to carefully note those critical moments when some meaning of the social action was revealed, however imperfectly, to the researcher. (pp. 257-258)

There is no standard in taking field notes. The important thing is to record meaningful insights from the field study. I took field notes to record my observations at all stages including my reflections on how the participants behaved or reacted during the FGDs, interviews and transect walks. In the transect walks, I noted agricultural activity, crops, livestock systems, livestock species, crop-animal interactions, VAHWs-farmers interaction and possible communication opportunities such as suitable locations for billboards or radio towers. I also recorded my reflections after I debriefed my interpreter.

5.3 PARTICIPANTS AND SETTINGS

The participants in this field study were farmers, traders and provincial or district animal health officers. One village from each country—Cambodia, Lao PDR and Vietnam—was chosen. Two FGDs were organised, one among farmers and another among traders. In the FGDs among farmers, about 10 to 15 people participated while around five to 15 traders were met in each village in each country. The provincial or district animal health officers in the provinces visited were also interviewed. It was only in Lao PDR where farmers and traders were separated into different FGDs based on sex because they were able to send female staff to assist me. Majority of the participating farmers in Vietnam were women.

The characteristics of the survey area, the Lower Mekong Zone (LMZ) and the Upper Mekong Zone (UMZ), were described in Chapter 3. In this field study, a village in the province of Takeo in Cambodia was chosen in the LMZ. A village in Luang Prabang province in Lao PDR and a village in Dien Bien province in Vietnam were chosen in the UMZ. The reasons for choosing these areas were detailed in Chapter 3. A senior animal health officer selected the village to be included in this study. The only criterion considered in the selection of the villages for this field study is that they were within the survey areas.

5.4 DATA PROCESSING AND ANALYSIS

The field study was exploratory in nature and the codes were not pre-defined. Code themes were identified and defined as transcripts of the FGDs and interviews were analysed. As this research used a grounded theory approach, coding was the main exercise in the processing and analysis of the data. Whenever possible, I opted to use three types of coding in the analysis namely, open coding, axial coding and selective coding. Draucker, et al. (2007) described these three types as follows:

> Open coding is the initial close, line-by-line or word-by-word examination of the data for the purpose of developing provisional concepts. Through the process of constant comparison, these concepts are collapsed into categories. In axial coding, the analysis is specifically focused on an emerging category. Selective coding is the examination of the data for the purpose of unearthing the core category and achieving the integration of the theoretical framework (p. 1138).

The codes used in the analysis of the transcripts became the themes identified for this field study. The coding process continued until themes were saturated from the data or when there were no other themes that could be identified (Dick, 2005; Draucker et al., 2007; Haig, 1995). The open codes were analysed for any pattern and anything that would contribute to answer the

research questions. In this study, I used open and axial coding in the transcription of FGDs and interviews recordings. I used selective coding to examine the main themes and whether participatory approaches were practised such as statements to involve grassroots stakeholders at any stage of animal health programmes.

5.5 POTENTIAL LIMITATIONS AND BIASES

The local counterparts in this research phase were relatively inexperienced in anthropological fieldwork and professional interpretation and this posed some challenges. I made sure that I debriefed the local partners after each FGD and interview to ensure that the interpretation was as close to what the study participants meant to express. The local partners who participated in the FGDs included the district animal health supervisor, village head and/or commune animal health workers and the interpreters. While most of the participating farmers in Vietnam were women, it was the lone male participant who was talking most of the time. Whether the opinion expressed during that time was the real opinion of the group can not be determined.

There were instances where local partners recommended against the use of audio recorders for fear that it might promote distrust among the participants. Thus, recordings of the FGDs were only done in areas where it was advised that it was appropriate to do so and where the participants expressed consent. Therefore, I went straight to selective coding while some of the FGDs were conducted. This posed a problem to me in terms of being selectively biased in coding (Dick, 2005). It was also difficult because I had multiple roles during the FGD, i.e., facilitator, note taker and observer. To overcome these issues, I ensured that I closely compared my observations and notes with those of my team during the debriefing sessions.

5.6 RESULTS AND DISCUSSIONS

Based on the main aims of this field study, I will divide the results and discussions into two sections, the evaluation of the qualitative instruments; and, outcome of the field study described in this research.

5.6.1 Evaluation of Qualitative Instruments and Approach

One of my main aims in this field study was the evaluation of qualitative instruments. Based on my field observations and field notes, study participants were at ease with the participatory instruments used in this field study. This enabled them to express their opinion in a stress-free and relatively risk-free environment. The transect walk was useful in building rapport with the study participants. The informal inquiry during the walk eased the connection between me and participants of this study. However it was not appropriate to be followed with a FGD because some of the participants were tired. The transect walks took about an hour to complete and covered an average 5-kilometre walk. I observed that the study participants were tired after the transect walks, writing in my field notes that "participants took a while to speak up, probably because of the length of the transect walk. I was expecting that I would get tired more than them because they would be used to walking long distances." The participants had a chance to rest but discussions had proceeded to other topics thus some of them were still too tired to participate. In some areas, the FGDs proved to be good avenues for communication as I noted a good exchange among the participants where heated but friendly debates ensued. The FGDs in Cambodia and Lao PDR were similar to friendly chats among friends as there was a sense of freedom whether the proceedings was recorded or not. The FGD in Vietnam was rather uneasy for the mostly female participants because of the presence of the commune animal health officer. "Please speak up," my interpreter would always remind the participants. I also suspected that because I and my interpreter were male and looked younger there was a feeling that they may not need to share their opinion and possibly they are culturally shy towards foreigners, especially English-speaking ones. All the interviews with the key informants went well. Informants from Cambodia, Lao PDR and Vietnam all exhibited confidence. They were not anxious about whether the interview was recorded or not but they were very willing to share their opinions on TADs and how they manage them.

5.6.2 Outcome of the Field Study

The outcomes of the field study are detailed in this section. I will first discuss results of the transect walk in this field study. I will detail some information especially main themes that may be of use in the evaluation of communication campaigns for TADs in the latter sections.

5.6.2.1 Results of the Transect Walks

Farmers in Cambodia and Lao PDR agreed to participate in the transect walk and eagerly showed my team around their villages. The villages visited in Cambodia and Lao PDR largely produced rice. Most of the farmers also had backyard farms where they grew other vegetables and kept small livestock animals such as chickens, ducks, pigs and/or goats. Community radio towers were present and primarily used to announce village current events and news, including emergency advisories in both countries. There were biosecurity measures such as fences or cages in place in some of the backyard farms visited. Footbaths, cleaning tools and proper drainage that a few farmers correctly identified as biosecurity measures in the KAP survey were absent. Farmers who took part in the transect walk claimed that they cleaned and disinfected the cages or areas of their livestock. However, most of their farm premises and equipment had not been cleaned for some time. Villagers in Cambodia and Lao PDR stated that they usually gathered during the afternoon just to catch up with each other or share a common hobby or household/community work. It was common practice for animal health officers and VAHWs to use these afternoon meetings to educate the farmers in the community regarding animal health issues.

The commune animal health office in Vietnam did not agree to transect walks in the villages. I tried to explain the purpose and importance of the transect walk, but the director of the commune animal health office insisted that I take a guided tour of the commune. The commune animal health officers guided me around the commune on a motorcycle and I was able to visit the commune market and a duck farm where I interviewed some traders and farmers. A farmer later offered his house to host me and the interpreter to conduct the FGD with a few farmers. There was no government employee present in the FGD. Some Vietnamese farmers implied in

the FGD that they received little assistance from the commune when there were issues on animal health. If there is any assistance from the commune animal health office, they claimed that they have to pay for it. The only time that the commune animal health officer had actively gone around villages was during the peak of HPAI outbreaks or after reports of human fatalities due to HPAI.

5.6.2.2 General Animal Health Knowledge

Discussions with farmers and traders confirmed findings from the KAP survey that there was little detailed knowledge about TADs in the region (Caro, 2006). Farmers could tell whether or not their animals were sick. However, only a few farmers in the three participating countries could identify the diseases that related to the clinical signs they observed. Laotian farmers in the village visited for this study described animal disease clinical signs that were not related to any of the major TADs investigated in this research. Participating farmers in this study requested more information on HPAI and more training on animal disease identification and management. A statement by a Laotian female farmer who claimed that they "still needed more information on HPAI and do not know anything about FMD" reflected the above and indicated that there were knowledge gaps in the communication of FMD for this particular village. Kwak (1999) suggests that the knowledge gaps decreased if there was high motivation and found that motivation, education level and media exposure independently influenced the knowledge gap. Kwak's findings may hold true for this research project where motivation played a key role in the farmers' and traders' decisions to follow animal health messages. Another factor that might have had an effect on motivation of participants within this study is the epizootic or zoonotic nature of TADs. In Chapter 4 it was stated that farmers wanted more information on HPAI, which is a zoonotic disease. In the previous chapter it was stated that the farmers expressed interest in getting more information on FMD but always emphasised that they needed more information on HPAI. These emphasised that farmers may be aware but wanted more knowledge about TADs. They are not confident how to address TADs despite the extensive awareness campaigns on TADs in the region.

Traders, especially Laotians, admitted that some of them bought sick animals as farmers often sold them off cheaply. Most traders grabbed these apparent bargains to maximise their profit, especially if they were able to slaughter the animals or sell the meat to the market themselves. Most of the traders were only interested in protecting their business and their knowledge of animal movement policies sometimes contributed to their subsequent actions. The traders explained that they had to pay more taxes when they tried to comply with government regulations concerning animal movement. The traders said that any initiative that provided them with training on disease management would be expensive for the government. As one Laotian trader said, "We do not want to receive training, as 'time is money'". Communicating animal health issues with traders was very challenging for animal health authorities as the traders only took notice of animal health policy changes if there were direct repercussions to their business. If there were repercussions, some of them resorted to illegal activities, such as avoiding animal movement checkpoints. There are also some concerns about the level of knowledge among the animal health workers interviewed in this study. An earlier quote by a Cambodian PAHO highlights this case when he said that "…CSF, which is bacterial…" CSF is a viral disease; therefore this statement demonstrates a prevalent situation in the selected GMS countries that there is lack of knowledge among animal health workers. When I asked this particular animal health officer how he educates himself, he said that he browsed the internet, read magazines and read information from the government. He said that he attended training courses but not on a regular basis. One of the possible reasons for this lack of knowledge among VAHWs is high turnover. Other studies have also suggested that field staff lacked the skills and knowledge to carry out their duties because of high staff turnover (Wilsmore et al., 2010). The high turnover results in the need for training new VAHWs.

Discussions and field observations confirmed that awareness does not necessarily mean knowledge or changed behaviour among stakeholders. Study participants in the previous phase claimed that they cleaned and disinfected equipment and cages in their farms. Although during the transect walk the farmers revealed awareness of the importance of cleaning and disinfecting, it was apparent from my observations of week-old dirt on some equipment and the poor state

of the cages that such awareness did not translate into practice. Hickler (2007) called this kind of awareness nominal awareness, which he described as measured in KAP surveys in either percentage or frequency. He evaluated awareness using metrics, which I discussed in Chapter 3. Hickler (2007) divides the metrics "awareness of priority messages" into "nominal awareness of messages" and "understanding of messages". Farmers who were able to name a certain disease were considered aware of the disease. This ability to name was considered a measure of achievement for animal health communication campaigns around the region. Awareness and knowledge, however, are two different metrics. Awareness is the state of being able to acknowledge a certain concept or identify of a certain disease. Knowledge, on the other hand, is the ability to apply that awareness into action as correlating a certain clinical sign of a disease. Knowledge, in the context of this research, was described by Hickler as *understanding of messages* or "the degree to which people understand the link between messages and behaviour" (Hickler, 2007, p. 14). Knowledge in this field study has not been achieved among study participants as most of them were still wanting for more "information" on various TADs. Why this is so, may be answered in later chapters where communication strategies will be evaluated.

5.6.2.3 Attitudes to Animal Health

Vietnamese farmers claimed that "small sicknesses worry us especially among buffalo/cattle because of the value of the animal…poultry diseases don't affect us that much [financially] because of the poultry's low value". This opinion was also shared by their Cambodian and Laotian counterparts. As one Laotian male farmer said "we don't usually treat poultry diseases when clinical signs appear. We wait for chickens to die. If cattle get sick even a little, we contact the VAHW." The statements exemplified how farmers regarded their animals. The farmers' concern for their animals' welfare and whether they took action was proportional to their market value. Farmers from the three countries in this study revealed that they seldom reported deaths of low value animals to the animal health office. Some farmers claimed that they have even sold sick animals that they deemed would not recover. As one Vietnamese farmer said, "we sell animals to get money for farming...buy things for children…we sell sick animals to get money". These statements seemed to highlight the fact that farmers considered cost

effectiveness as a major factor in whether they acted on animal health messages. For the study participants, non-reporting and selling the animals or just letting the small animals die was cheaper. These findings support those of Cismaru (2006), who showed that efficacy and costs are the main factors that could prompt behavioural change. In terms of seeking assistance for their animals, most of the participating farmers in the three countries claimed that that they sought the assistance of their VAHWs when their medium to large animals presented with clinical signs of disease. Majority of the farmers explained that they would just bury small animals, such as chickens or ducks if they died from a disease. While no one in the FGDs claimed that they eat dead birds, some farmers claimed selling their dead animals to recoup their investments. The VAHWs in all three countries claimed that they prioritised any animal disease that would mean more financial losses to farmers. One Laotian VAHW claimed during the transect walk that he only paid attention when there is an animal disease outbreak if there were more than two animals involved.

One of the objectives of communication campaigns in the region was to encourage stakeholders to report any incidence of diseases (OIE-RCU, 2007). Non-reporting, regardless of the number of animals and nature of the disease involved could have some repercussion for animal health strategies in the region such as the delayed reaction to a possible epidemic. The lack of regard by farmers about the importance of reporting animal diseases shows some ineffectiveness in the communication strategies used in the region. Most of these communication campaigns were based on behavioural change communication especially those of HPAI (CARE International Vietnam and Quality of Life Promotion Centre, 2005; Hickler, 2007). They have failed to emphasise the importance of reporting animal disease.

5.6.2.4 Farming Practices and Skills

The farming practices that I describe in this chapter are different from what I described in the previous chapter. It focused mainly on small-farm biosecurity. The focus of communication campaigns was on strengthening best farming and trading practices and skills; including the implementation of biosecurity, complying with animal movement regulations and prompt

reporting of animal diseases.The Food and Agriculture Organization of the United Nations (FAO) (2007) defines biosecurity as:

> a strategic and integrated approach that encompasses the policy and regulatory frameworks (including instruments and activities) for analysing and managing relevant risks to human, animal and plant life and health, and associated risks to the environment (p. 3).

The "overarching goal of biosecurity is to prevent, control and/or manage risks to life and health" (FAO, 2007, p. 3). Biosecurity is, therefore, important in any farming activity regardless of scale. International organisations recommend a holistic approach to biosecurity (FAO, 2007; OIE, 2007b; WHO, 2005). The FAO report explained that national strategies should comply with international standards. In the national setting this would mean standards that are implemented at all levels down to the grassroots. International organisations acknowledge that implementing an ideal biosecurity strategy entails significant costs. Research initiatives have been supported by various organisations to find cost-effective biosecurity measures suitable for the poor (Department for International Development et al., n.d.).

Farmers and traders in this study acknowledged that biosecurity was important in the prevention and control of animal diseases. However, discussions with the farmers and traders showed that their concept of biosecurity was limited to the separation of new animals, and cleaning and disinfection. This may suggest that most of the participating farmers did not understand what biosecurity was despite some claiming to practise it. When it became evident that farmers and traders were confused about what biosecurity strategies they were implementing, the research team explained what biosecurity was and asked whether farmers and traders valued this strategy. The following statements from a Laotian farmer highlighted a motivational difference in implementing a biosecurity technique:

> we put new poultry in cages to familiarise them with the environment for about five days. We separate the new animals from the old ones because we are afraid that old ones will fight the new ones. In swine, we separate the new ones with the old ones because they are not familiar with each other.

The farmer also said that they isolated large animals from old stock for about a month to "familiarise them with the environment, other animals and the owner". When further asked how they prepared for the separation, the same farmer said that, "we don't clean the pens when new animals come in". All of the participating Vietnamese farmers stated that they cleaned and disinfected; however, they did not have any specific answer as to what were the recommended number of days that they kept the animals isolated from the old stock. One farmer said during the FGD that:

> it depends on how confident we are about the new animals that we bought. We usually mix new and old animals together whenever we feel like it. For chickens, we usually sell the old stock.

Most of the participating Cambodian farmers claimed that they "separate [new] animals from the old ones for 14 days. We learn a lot from TV." The Cambodian provincial animal health officer interviewed for this study claimed that the farmers were not confident in adopting government recommendations. He explained that farmers "are afraid to use our 'veterinary techniques'". He was referring to TAD strategies such as vaccination, first aid treatment of the animals, cleaning and disinfection. He explained that some farmers were not confident in using these strategies without the assistance of the VAHWs. Farmers in all three countries, however, claimed that they received no training from the government except for information on HPAI such as that contained in leaflets, brochures, posters, and shirts. Only VAHWs received training from the government. The VAHWs attended to individual requests for assistance from farmers

or traders. Farmers requested that they receive basic training on disease identification and management.

The farming practices described by participants of this study demonstrated that government communication activities have made little impact on their behaviour or practices, confirming the findings of the KAP study and from other related communication evaluation studies (See CARE International Vietnam and Quality of Life Promotion Centre, 2005; Hickler, 2007).

5.6.2.5 Trading Animals

Farmers often traded their animals because they needed cash. Sometimes, however, they sold sick animals to recoup the cost of raising them. Cambodian farmers sold small animals directly in the market, "we usually sell poultry along the road, under the tree or at the nearest market. For other animals, traders usually come to the village to gather animals and buy them."

Traders confirmed that some of the farmers sold their animals when the animals became infected with a disease. However, they claimed that they avoided buying such animals "due to possible losses". Nonetheless, traders in this study revealed that some of their fellow traders "actively seek sick animals" to maximise profit. Further discussions with the participating traders in this study revealed that they complained about the number of prerequisites that the government imposed before they were able to move or trade animals. Laotian traders particularly aired this sentiment and claimed that "illegal practices continue because there will be other means of disposing of diseased animals". The farmers were apparently referring to the number of requirements placed on them by the government and expressed their lack of confidence in the government's animal movement policy. A particular example raised during an informal discussion with the traders was the establishment of quarantine checkpoints. The traders explained that the checkpoints were "too much" for them as they had to comply with significant paperwork before they could move the animals. The price and demand for the livestock was so great that the traders were willing to take the risk of illegally moving the animals. The Cambodian and Laotian traders explained that they had to pay "taxes" at these

quarantine checkpoints; thus there were times when they avoided these checkpoints. The Cambodian and Laotian traders indicated that the taxes were usually official.

Most traders followed government policy or prerequisites on moving animals. However, as with the farmers, they did not practise any biosecurity measures. Most of the traders that participated in this study claimed that they do "not normally clean their vehicles regularly". Some of them claimed that they only clean and disinfect "if there's too much blood on the vehicle".

The main focus of communication campaigns in terms of affecting the trading practices of stakeholders is to promote compliance with animal movement policies. However, the grievances of farmers and traders in this field study showed that there was a need to re-orientate how they were informed about the animal movement policies. The farmers and traders did not have a good understanding of the importance of complying with the current regulations. There is also the problem of implementation of policies that were made without proper consultation with various stakeholders. Also, farmers tend to see the extra cost and inconvenience and not the benefits of adopting good animal husbandry practice.

The VAHWs also appeared to be one of the most important gatekeepers among farmers and traders. While the traders does not have any use of the VAHWs but for certification or vaccination purposes, traders will still seek the assistance of any VAHW. I will, therefore, further evaluate the role and practice of VAHWs in communicating TADs. I decided to exclude Vietnam in the next phase of the research because it has a different animal health worker system compared to Cambodia and Lao PDR. The VAHW systems in Cambodia and Lao PDR were voluntary while Vietnam's CAHW system was not. The CAHWs are government employees. This move allows for a better comparison of Cambodia and Lao PDR in terms of implementing communication programmes on TADs. The last phase of this research or the main field study will focus on the evaluation of communication campaigns in Cambodia and Lao PDR, communication at the village level, and the role and practice of VAHWs in communicating about TADs.

5.6.2.6 Identified Themes Affecting Animal Health Communication

I identified a number of themes based on the coded transcripts of some FGDs and interviews including field notes in this study. These themes are related to the issues that I identified in the previous chapter, namely, low level of knowledge and awareness among farmer-traders; lack of training among VAHWs; risk perception among participants/attitude towards TADs; dependence on vaccination as a solution to TADs; and lack of understanding of the concept of biosecurity. In addition, the themes that I identified in this field study are as follows:

- motivation to follow animal health messages
- differences and similarities among countries in implementing animal health programmes
- trusted communication channels
- feedback
- communication strategy

I will discuss these identified themes in the following section and detail my reflection on the transect walks and the variables studied thereafter. The literature was also used to help in the interpretation of the data. The highlighted quotes in the following sections were agreed upon by the participants of the FGDs. I ensured that it was the common opinion among the group by following on the question until I am not able to encourage replies from the group. Thus the highlighted quotes reflect the opinion of the respective group of participants. Whenever applicable, highlighted quotes from female study participants were identified because the majority of the participants were male.

The most common stakeholders for any animal health communication campaigns are farmers, traders and animal health workers. However, despite government and other organisations' efforts to engage them on proper identification of animal diseases and their management, some claimed they did not have enough information or the opportunity to participate in communication or animal health planning (CARE International Vietnam and Quality of Life

Promotion Centre, 2005; Caro, 2006, 2008). Communication or public awareness activities have slowly been prioritised. Despite the changes, gaps still exist in communicating animal health messages and funding communication campaigns. The KAP Survey discussed in the previous chapter showed that there was an awareness of biosecurity issues among stakeholders, but they continued with their risky behaviours such as not implementing biosecurity measures. There were other issues that were identified in this field study after re-coding the transcripts of FGDs. I will discuss the factors that might affect animal health communication in the selected GMS countries. Table 5.3 shows some examples of how I identified the codes/themes in this field study. Following this table are the discussions and analysis of these themes.

Table 5.3 Examples of how transcripts were coded in this field study.

Participant's statement	Expanded field/FGD/interview notes	Initial Coding	Re-coding
"We know HS, FMD, bird flu…" [Cambodian farmer] "I've had training on HPAI and FMD" [Cambodian provincial animal health officer]	Study participants claimed that they were aware of TADs	Knowledge	TAD knowledge -Low level -Fair level
"We usually sell animals with FMD" [Laotian farmer]	Study participants said that they sold sick animals, particularly animals with FMD.	Knowledge	Awareness -Exists -Nil
"Some farmers sell sick animals but we don't want to buy them due to possible losses." [Laotian trader] "We would prioritise HPAI then FMD. FMD is a virus compared to CSF, which is a bacterial disease[15]…" [Cambodian key informant]	Traders said they were afraid that they would lose some money if they bought sick animals. The Cambodian key informant said that they would prioritise HPAI because of its zoonotic nature.	Attitudes	Attitude towards animal health messages -Motivated by financial reason -Motivated by personal preservation
"HPAI affects people" [Cambodian, Lao and Vietnamese farmers]	Participants from the three countries expressed concern about HPAI.	Attitudes	Risk perception -High -Low
"There are rules and regulations on animal tagging/identification. Biosecurity is encouraged and animal disease prevention law	Animal health officers encouraged the use of biosecurity regardless of farm sizes.	Attitudes	Biosecurity attitude -High -Low

[15] CSF is actually a viral disease, thus, this statement reflects lack of knowledge.

Participant's statement	Expanded field/FGD/interview notes	Initial Coding	Re-coding
were passed…" [Laotian key informant]			
We usually sell poultry along the road, under the tree or at the nearest market. For other animals, traders usually come to village to gather and buy them." [Cambodian farmer] We raise animals as additional food for the family [Laotian farmer]	Farmers traded their animals wherever convenient. They also sell to traders. Some farmers raise animals for additional food source.	Practices	Trading practices -Sell -Do not sell
"Illegal practices continue because there will be other means of disposing animals." [Laotian trader]	Traders said that illegal animal movement will persist as long as there were other means of doing so including bribing some officials or going through unofficial border crossing.	Practices	TAD practices -Illegal animal movement -Selling of sick animals
"We have not received any training only few information such as HPAI." [Laotian farmer] "Regional officers were encouraged to undergo training." [Laotian key informant	Farmers expressed desire to undergo more training on disease identification. Some training was available to animal health officers.	Skills	TAD training -Some training -No training
"Other training that local government staff received included training on disease identification and outbreak management of FMD and HPAI; capacity building on management; and extension services with villagers." [Laotian key informant]	Training was programmed from the national government down to the local government units.	Communication framework	-Top-down approach -Agricultural Extension -Development communication
"The wife mainly takes care of feeding the animals especially poultry and the children also help in taking care of the animals especially poultry and other small livestock" [Vietnamese farmer] "Women usually sell poultry along the road, under the shed (under the tree) or the nearest market" [Laotian	There was a difference in the roles of men and women with regard to animal raising.	Sex	Sex -Male -Female Gender role in animal keeping -Male for big livestock -Female for small livestock or poultry

Participant's statement	Expanded field/FGD/interview notes	Initial Coding	Re-coding
farmer] "Men usually take care of cattle or high-valued animals" [Cambodian farmer]			

5.6.2.6.1 Motivation To Follow Animal Health Messages

It was shown after further analysis of the FGDs and interviews with the study participants that participating farmers and traders in the survey areas in Cambodia and Lao PDR were motivated to follow animal health messages if there were risks to their personal well-being. This was primarily true if the animal disease was zoonotic. Animal health workers claimed that they also prioritised diseases in cases of multiple outbreaks of zoonotic and epizootic animal diseases. As the Cambodian provincial animal health officer said "I would prioritise…HPAI. I think FMD should come second as it is also caused by a virus compared to CSF, which is bacterial [*sic*], but…CSF has high mortality." This statement shows the interviewee's confusion on what to prioritise, but it is clear that he would prioritise zoonotic diseases in cases of multiple animal disease outbreaks. The Cambodian provincial animal health officer explained that "animals recover from FMD, thus I think CSF could rank second in priority, then FMD". It is also evident in this statement that animal deaths or obvious losses to farmers' investments are drivers for animal health officers to prioritise action during an animal disease outbreak. It was revealed from statements during the discussions that the farmers paid correspondingly more attention the greater the value of the animal. A Laotian male farmer further confirmed that "poultry diseases do not affect [us] that much because of their low value; however, when our buffalo/cow gets sick we have big losses financially".

I gave the study participants a hypothetical scenario where they were presented with two communication messages and asked which one they would prioritise. The first message called for the study participants to separate poultry based on species and age to prevent HPAI and any zoonotic disease. The second called for the study participants to separate new animals to prevent the spread of diseases such as CSF and FMD. These messages reflected the general key

messages produced by various organisations in the GMS during the time of the field study (R. G. Alders and Bagnol, 2007; Caro, 2006; FAO, n.d.; Hickler, 2007). The common call to action for both messages was to separate old and new animals to avoid transmission of animal diseases. The farmers and traders claimed that they would prioritise the HPAI message to separate poultry because "HPAI affects people". I modified the hypothetical scenario for the district/provincial animal health officers and asked them to choose between HPAI or FMD and/or CSF to attend to. The common answers among the district/provincial animal health officers were to prioritise HPAI. As with the farmers and traders, the district/provincial animal health officers said that they would prioritise HPAI over FMD and/or CSF because "HPAI affects people". There also seemed to be a belief that animals were easily replaceable as Vietnamese farmers expressed during the FGD. They explained that they regularly sold the animals to upgrade to a better breed. Laotian farmers, on the other hand, claimed that they tried to sell sick animals with less obvious clinical signs and replace them. They explained that trading sick animals was an easier resolution to animal health issues; especially those that they deemed may cost them more or have untreatable disease. Among farmers and traders in the FGDs, trading sick animals seems to be an accepted practice. This attitude of the study participants can be explained in the light of the findings by Block and Keller (1998). Their integrated theory of health appeals based on the protection motivation theory (PMT) and the trans-theoretical approach explains people's psychological reactions such as fear, acceptance and change in behaviour from unhealthy to healthy practices. They suggest that people are motivated to follow a communication message based on their perception of their vulnerability, severity of the threat, and the efficacy of desired behaviour at different stages of contemplation (Block and Keller, 1998). Furthermore, fear and vulnerability motivate people to change their behaviour at various stages of their threat perception. In essence, they posit that the greater the perception of vulnerability and readiness to change in people, the greater the possibility for them to respond actively to a message. In another study, Witte and Allen (2000) also found that increasing fear appeal in messages produced greater behavioural change among stakeholders. In the present study the farmers and traders who said they would prioritise following HPAI messages were

motivated to do so by their perceived vulnerability to HPAI infection. However, readiness to change may also be affected by other factors, such as personal involvement and interest. Kwak (1999) suggested that motivational variables and media use narrowed the knowledge gap, regardless of education and knowledge acquisition. These findings from previous studies may, in part, be used to provide some explanation as to the motivating influences on participants in this field study and why they reacted as they did to animal health messages. Self-preservation may have appeared to be a major motivating factor for the farmers and traders involved in this study to act on animal health messages. However, there was also the possibility that farmers' involvement in animal health programmes may have increased their motivation, which in turn may have decreased the knowledge gap and lowered risk behaviours for TADs. This is where participatory approaches fit in. Grassroots stakeholders have high involvement in a participatory approach and, if farmers and traders are invited to participate in animal health programming, there is a possibility that knowledge gaps and risk behaviours will decrease. However, since the studies cited here were conducted in Western settings, it is not certain whether the findings would also hold true in the GMS.

Despite the apparent awareness among study participants, there was limited knowledge among the cohort about HPAI and its management. This meant that most of the people who participated in the FGDs and interviews were well aware of the disease, but could not apply the information they had. Some of them were aware that selling sick animals was not acceptable to the authorities but they continued to do so. Further analysis revealed that lack of motivation to follow the animal health messages was a factor for their limited knowledge of animal diseases.

5.6.2.6.2 Differences and Similarities among the Countries

I analysed the transcripts and compared the findings with my notes and found that there were differences and similarities among the countries with regard to animal health programmes, particularly communication programmes. The VAHW systems in Cambodia and Lao PDR were similar because both were genuinely voluntary compared to Vietnam, which had the commune animal health worker system in place. The commune animal health workers (CAHWs)

confirmed to me that they were government-employed and based at the commune animal health office. They handle issues on animal health in a number of villages. The director of the commune animal health office in Vietnam said that the commune animal health worker supervises a number of villages and coordinates animal health activities in the commune. The VAHWs are volunteers from among the farmers living in the village. The countries have limited funding for animal health programmes; consequently communication about TAD programmes is underfunded or inefficiently implemented. The best supported TAD programme in Cambodia, Lao PDR and Vietnam was for HPAI.

It was very common for farmers and traders to ask us for more information materials particularly on HPAI. This implied that they were not confident of what they knew about TADs. The most common communication strategy based on information from farmers, traders and provincial animal health officers was the use of mass media. They said that they use television, radio and read posters most often and use them also to learn about animal health issues.

5.6.2.6.3 Trusted Communication Channels

It was noted from transcripts of FGD with farmers and traders that there seems to be a growing preference for television and radio as better means of communicating animal health issues. Television was particularly mentioned as a preferred communication medium for any animal health communication message. The participants of the FGDs did not say that they do not trust any communication channel but expressed that television, radio and VAHWs were the most trusted. However, the farmers strongly expressed their support of their VAHWs because of the ease of contacting them in case of any TAD outbreak. It was a common opinion in the FGDs among the farmers that they would prefer to consult with the VAHWs first before consulting government veterinarians. Farmers in Vietnam also trusted their commune animal health worker but they complained that the commune animal health workers did not give full support in terms of their animal health service needs. "The commune animal health workers visited us to inform us about HPAI, distributed information materials and vaccinated chickens but we have to go to

their office to get their advice on animal health," one farmer said. The Vietnamese farmers explained that the commune animal health worker will give them advice on what medicine to buy but they would be expected to administer the medicine themselves. Generally, the farmers primarily trust their VAHW followed by the district animal health officer (DAHO), provincial animal health officer (PAHO) and the national animal health officer (NAHO) (Figure 5.4). These were ranked according to their accessibility to the farmers. Traders in the three countries said that they trusted government veterinarians to provide any animal health advice (Figure 5.5). They said that they do not usually consult with the VAHW because they usually do not have any business with them. Despite this opinion from the traders, I found that VAHWs are an important influence on the effectiveness of animal health communication because the majority of the farmers, NAHOs, PAHOs and DAHOs rely on them either for initial TAD advice or liaising in the village. Therefore, I will discuss the VAHWs' role in communicating animal health issues in detail in the next chapter.

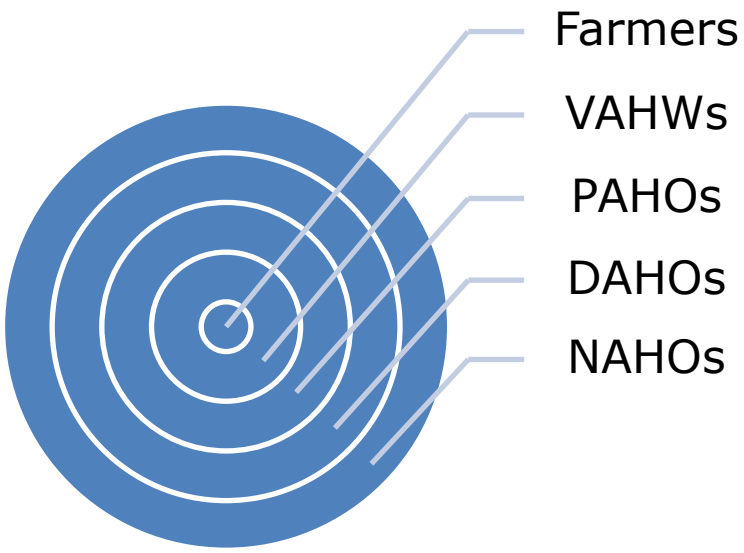

Figure 5.4 Farmers' trusted communication agents

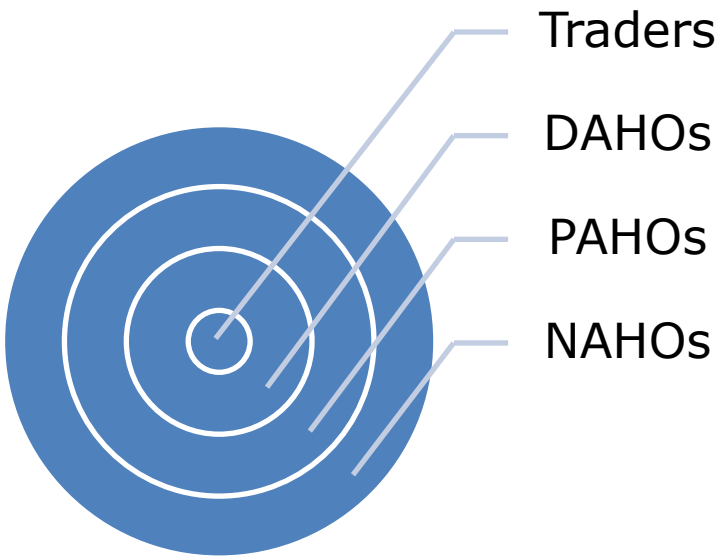

Figure 5.5 Traders' trusted communication agents

After discussions with farmers and traders and interviews with the key informants it was deduced that animal health communication strategies implemented in the region relied heavily on mass media such as television, national radio, community radio, posters, brochures, leaflets and interpersonal communication. A Laotian farmer said that they use television for entertainment and would get some information on animal health, "sometimes from TV, sometimes from radio". A Cambodian trader also said that they get information from radio and television. The Vietnamese also said the same. The use of mass media was used mainly to increase public awareness of HPAI, while interpersonal communication or village meetings were more popular, not only as part of the HPAI campaigns, but also as a strategy within the FMD campaign.

5.6.2.6.4 Feedback

There was no indication that there is any formal feedback from the farmers to the government. I asked the study participants about feedback or any evaluation activities, but they could not describe any regular feedback activities that the government had initiated. However, a Laotian district animal health worker claimed that "comments were received directly from farmers regarding services. Village meetings also assisted in the evaluation of services as it was a time

that farmers interacted with government animal health officials." The Cambodian provincial animal health officer also said that he gets feedback when he meets traders. He explained that he informs them of any new government policy on animal movement and asks them if they have any issues with any government policy. Farmers in Cambodia and Lao PDR confirmed that feedback was solicited only when there were special village meetings. Such an evaluation strategy was opportunistic because there was no formal plan or framework for evaluating animal health services or the communication activities. Chamber (1997) emphasised that the grassroots stakeholders' knowledge was the basis for planning and change in any developmental project. Participatory approaches to animal health are not new. However, they are not practised in the selected countries in this field study. Evaluation is important to any activity particularly development projects because it systematically investigates the effectiveness of that programme (Rossi et al., 2004).

5.6.2.6.5 Communication Strategy

Statements from the study participants suggest that communication strategies used in the selected GMS countries generally involved a top-down approach. For example, one of the aims of the national HPAI communication plan was to increase awareness about the disease by using mass media such as print, radio, television and alternative media including interpersonal communication. Study participants confirmed that there was no specific feedback collected by the government from them regarding animal health programmes or communication activities. Farmers in all three countries said they "only receive posters and brochures". A Cambodian farmer said that "we have only received HPAI leaflets and pamphlets and heard HPAI campaigns on TV and radio". This implies a top-down communication strategy without a formal evaluation or feedback phase. Also, the communication campaigns that study participants mentioned most often were the HPAI campaigns. Farmers and traders in the selected GMS countries said that they also get information during village meetings. The livestock department organises some of the village meetings but only when needed according to the provincial animal health offices in Cambodia, Lao PDR and Vietnam. It was mentioned during the FGDs that the village meetings are formally or informally initiated on a regular basis.

It is formally initiated if it was organised by the village head or government officers. Informally, the village meetings always happen as a means for the villagers to catch up with each other talking about a range of issues from daily life to animal keeping. The farmers and traders were also at ease with the prospect of attending a village meeting. A female Laotian explained that "we can approach the VAHWs during the village meeting and get answers right away". None of the women participating in this field study were members of any ethnic group.

5.6.2.6.6 Grassroots Capacity

The participants of this field study were satisfied with the communication role that the VAHWs fulfil, such as engaging farmers or distributing information materials. However providing technical advice was limited. VAHWs were volunteers and while it was not expected that they would be equally as competent as professional animal health officers, they were expected to confidently articulate basic animal health issues such as identifying clinical signs and first aid. As mentioned earlier, there was no explicit funding for public awareness of TADs, meaning provincial governments resorted to traditional means, such as group meetings. The Cambodian provincial animal health worker said that, "for public awareness, we invite the farmers or the traders to the office to explain current policies". They expected that the few farmers or traders that they would meet near the provincial capitals would relay any information to the rest of the farmers or traders in the province. However, these meetings did not take place on a regular basis. Meetings with farmers were held on an as-needs basis. In the GMS countries, at the village level, most animal health services still used individual visits to educate farmers. These visits, however, were primarily to treat or vaccinate animals. One Laotian farmer claimed that a "small number of animals are given to the VAHWs to treat. It depends on the family if they will decide to call the district [animal health worker]. Usually the farmers are the ones who administer the medicine to the animals." The Vietnamese farmers also said that while they consulted the CAHW, they were still asked to administer the medicine to their animals themselves. These statements from the farmers imply a number of things. They trust their local VAHWs but there may be not enough VAHWs to serve the village. Another implication of these statements may be that they do not trust the VAHWs' skills to administer the medicine and would rather do it

themselves, or the VAHWs were not confident enough to practise what they have learned. Whatever may be true, these implications lead to the suggestion that grassroots capacity is lacking. In the long run, there is a need to train VAHWs and farmers to administer medicine to animals and apply first aid.

In Vietnam, it was common for farmers to say that "the commune animal health workers visited us to tell us about HPAI. They also gave information materials and vaccinated chickens," thus affirming that commune animal health workers frequently visited villages during the HPAI campaign. The farmers explained that they tried to visit the commune animal health office whenever they needed advice on their animals' health. They complained, however, that most often, they were advised to buy medicine and instructed on how to administer it by themselves, which reflected the impression that the commune office was not proactive in the implementation of animal health programmes. It was learned during the FGDs that the commune animal health officers regularly visited the villages. They distributed information materials such as shirts and posters. These visits were made possible by funds for the HPAI campaigns. Most of the funding, especially in the three GMS countries, was from international non-government organisations or inter-government organisations (Caro, 2006, 2008; Department for International Development et al., n.d.; Hickler, 2007; Otte et al., 2004). The village visits were expected to cease whenever funding ceased.

CHAPTER SIX
THE GATEKEEPER: THE ROLE OF THE VILLAGE ANIMAL HEALTH WORKER IN COMMUNICATING ANIMAL HEALTH ISSUES

The exploratory study in the previous chapter was used to identify the themes for investigation in the main field study of this research project. The major outcome of the exploratory study was that there seems to be some ineffectiveness in the implementation of communication campaigns in My aim in this research phase was to investigate the role and practice of VAHWs in communicating animal health issues and to evaluate communication campaigns in selected GMS countries. I will report the results in two chapters because this research phase had two separate parts.

6.1 INTRODUCTION

The results of the investigation of communications at the village level and the role of VAHWs are described in this chapter. One of the aims of the research in this chapter was to investigate how communication about TADs is practised in selected GMS countries. Thus the identified themes will be further investigated here. The main themes identified in the previous chapter included differences and similarities between Cambodia and Lao PDR, the importance of communication at the village level, and the role and practice of VAHWs in communicating animal health issues. These are addressed in this chapter by locating the research in Cambodia and Lao PDR and a focus on the role of VAHWs at the village level.

In Chapters 2, 4 and 5 I have confirmed that VAHWs are important agents in communication and that their participation is important for successful communication (CARE International

Vietnam and Quality of Life Promotion Centre, 2005; Chinis and Monsoor, 2007). I will examine in this chapter how communication works at the village level, the factors that affect communication about animal health and whether there are communication gaps at the village level.

The aims that will be addressed in this chapter are:

- To provide greater understanding at a detailed level of the role and practices of VAHWs in animal health communication; and,

- To understand at a detailed level how communication about animal health works at the village level.

6.2 METHODOLOGY

Qualitative approaches were used to gather data in this field study. Tools used in data gathering included FGDs, semi-structured interviews and field notes. I also reviewed the literature and used other sources, including results from previous phases of this research, to investigate the characteristics of VAHW systems and the expected roles of VAHWs. The effectiveness of voluntary initiatives such as the VAHW was examined to assess the impact of participatory approaches. Data were transcribed, coded and re-coded as described in Chapter 3. The FGD and interview transcripts were also expanded to further enrich what was observed during the proceedings. I also referred to my field notes, which were written soon after each FGD and interview. A transect walk was not used because it could have tired some of the participants if it was held prior to an FGD. Purposive sampling was used to select the study participants. The following criteria were used as the basis for selection of study participants:

- Participants come from within the Upper or Lower Mekong Area specifically the FMD-free zones identified by OIE.

- Participants are agricultural farmers with large livestock animals.

- Participants are representative of low, middle and high income earners in the village.
- Trades animals within the Upper or Lower Mekong Area specifically the FMD-free zones identified by OIE.
- Works in the government animal health services within the Upper or Lower Mekong Area specifically the FMD-free zones identified by OIE.

6.2.1 Guide Questions

The guide questions for the FGDs and interviews were designed to assess the study participants' sources of information as a community and as individuals. Questions related to their knowledge of TADs, use and impression of available animal health services, perception of risks, risk prevention, attitudes towards animal health and their motivation to follow animal health communication messages. These questions were designed to understand how communication works at the village level and to probe more deeply the communication role of VAHWs.

6.2.2 Participants, Sampling and Setting

Cambodia and Lao PDR were selected for this field study because both countries have VAHW[16] systems in place (Chapter 3) and because of the apparent differences and similarities between the two (Chapter 5). The research is more feasible in these two countries because of factors mentioned in the previous chapter. A VAHW is a volunteer tasked to assist the government in animal health related programmes. The participants in this field study were farmers, traders, VAHWs and national animal health officers (NAHOs) in Cambodia and Lao PDR. The NAHOs were the coordinators of FAO projects on animal health. The NAHO is usually a senior veterinary staff member of the national government's veterinary service. While there is almost an equal distribution of male and female in the FGDs, it was mostly the males who were talking so I took note of opinions made by the women and indicated this in the discussions. It was important to separate women from men as the outcome of the exploratory field study showed that there were some biases in the opinion towards men. A clearer idea of the opinion

[16] In Lao PDR, volunteer animal health workers are called Village Veterinary Workers but for consistency in the discussion, they are referred to as VAHWs.

of men and women may result to a better analysis of the relationship between gender and livestock and, subsequently, better interventions (Ahlers et al., 2009).

This field study was conducted between December 2009 and February 2010 in two countries in the Mekong Region. Randomly selected farmers from 28 villages in the provinces of Takeo (7 villages) and Kampong Speu (7 villages) in Cambodia, and Luang Prabang (7 villages) and Xiang Khuang (7 villages) in Lao PDR were invited to participate in FGDs (see Tables 6.4 and 6.5). Representatives from at least two traders' groups were included in FGDs in each country. Seven VAHWs and the NAHO in each country were individually interviewed for this field study. I have indicated in Tables 6.4 and 6.5 the villages where VAHWs were interviewed.

Table 6.4 Summary of Participants by Number and Gender of FGD Participants in Cambodia

Province	District	Village	No. of Participants	
			Male	Female
Kampong Speu	Oudong	Youkchou	10	8
Kampong Speu	Phnom Sruoch	Krang Katoun	10	11
Kampong Speu	Phnom Sruoch	Tropeang Attock	4	11
Kampong Speu	Oudong	Thasal	5	7
Takeo	Ongkoborai	Svay Cheung[17]	13	17
Takeo	Ongkoborai	Tai	6	6
Takeo	Samroung	Prey Snoul & Prey Neang Poum	6	17
Takeo	Donkeo	Pro Hot[17]	6	5
Takeo	Tramkock	Ang Troy	12	2
Takeo	Tramkock	Taphem[17]	4	5
Kampong Speu	Samroungtong	Rolang Kreu[17]	3	3
Kampong Speu	Samroungtong	Preah Salah[17]	10	4
Kampong Speu	Chbar Morn	Trapeang Preah[17]	4	7
Kampong Speu	Chbar Morn	Thampy[17]	6	10
TOTAL			**99**	**113**

[17] VAHW was interviewed

Table 6.5 Summary of Participants by Number and Gender of FGD Participants in Lao PDR

Province	District	Village	No. of Participants	
			Male	Female
Xiangkhouang	Paek	Huaysuang[17]	6	5
Xiangkhouang	Paek	Dong[17]	6	1
Xiangkhouang	Paek	Khan Khay[17]	8	5
Xiangkhouang	Paek	Nanu[17]	10	0
Xiangkhouang	Paek	Lathngone	11	30
Xiangkhouang	Paek	Ly	10	6
Xiangkhouang	Paek	Huak	4	6
Xiangkhouang	Phoukoud	Ang[17]	10	8
Xiangkhouang	Phoukoud	Mang[17]	9	1
Xiangkhouang	Phoukoud	Sui[17]	9	3
Xiangkhouang	Phoukoud	Phouvieng	6	11
Xiangkhouang	Phoukoud	Song	8	0
Xiangkhouang	Phoukoud	Chomsy	8	3
Xiangkhouang	Phoukoud	Phieng Louang	6	4
TOTAL			**111**	**83**

6.2.3 Potential Limitations and Biases

I mentioned in Chapter 3 how government-appointed interpreters may have inadvertently limited the earlier phase of the study. I tried to address this limitation in this field study by debriefing the interpreters after each FGD and interview. I expanded the interview and FGD transcripts to ensure that the context of the FGDs and interviews were recorded as the interpreters explained it and how I interpreted it. I consulted the interpreter or the NAHO to confirm whether my observations were correct. I also kept field notes to ensure other insights were documented.

6.3. RESULTS AND DISCUSSIONS

I reviewed the literature including official and unofficial records with regard to the VAHW system in Cambodia and Lao PDR and this is presented in the next section. Statements from study participants are also evaluated to understand how communication works at the village level and their perceived communication role and practice of VAHWs.

6.3.1 Volunteer Animal Health Work in Cambodia and Lao PDR

The responsibility of attending to the animal health needs of Cambodia and Lao PDR are the concern of both government/private veterinarians and a system of para-veterinarians. Veterinarians in both countries are scarce and para-veterinarians have been created to fill the gap in animal health services. Para-veterinarians are not qualified veterinarians, but many have years of experience in keeping livestock. Some of them have attended technical schools in their countries. There are mixed feelings on the merits of para-veterinarians operating in some Southeast Asian countries because of their lack of formal qualifications. However, member countries participating in regional animal health programmes and international animal health experts have acknowledged that the shortage in veterinarians in the region requires some flexibility in terms of the approach to control and eradicate TADs (ASEAN, 2010a, 2010b; OIE, 2003, 2007b). This flexibility includes the acknowledgement of the importance of the role of VAHWs. Therefore the engagement of para-veterinarians has been seen as a way for qualified veterinarians to train and monitor the services rendered by VAHWs. In Cambodia VAHWs were officially recognised by law in 2001 (Wilsmore et al., 2010). There are is no record of when VVWs in Lao PDR gained official recognition, but there was official recognition of the role of para-veterinarians among SEACFMD member countries from 2001 (OIE, 2003, 2007a, 2007b).

The Department of Animal Health and Production (DAHP) has responsibility for VAHWs in Cambodia. DAHP is part of the Ministry of Agriculture, Forestry and Fisheries. The Cambodian NAHO said that the DAHP supervises the provincial animal health and production offices in the country, which manage different districts. The district animal health and production offices, in turn, direct the villages under them. There is varying information on the number of villages and VAHWs in the literature. An OIE evaluation report placed the number of VAHWs at 8,876 and the villages at 13,707 (Weaver et al., 2007). Other authors said that there was an average of two VAHWs in the 14,073 villages in Cambodia (S. Burgos, Hinrichs et al., 2008). FAO consultants estimated that number of Cambodian VAHWs at around 16,000 in a total of 13,694 villages (FAO, 2011). They also found that about a third of the VAHWs were inactive. A recent FAO consultancy mission in Cambodia also identified a number of issues with VAHWs, some

of which were identified in this research project (Edwards, 2011). These issues include the potential for conflict of interest and a lack of technical experience. Some VAHWs' ability to earn income for providing general services and sale of products could be compromised by their role in providing core animal health system services including diagnosis, reporting and control of disease outbreaks, particularly where this could result in losses of income or livestock by owners. In Lao PDR, the Ministry of Agriculture and Forestry entrusts the Department of Livestock and Fisheries (DLF) to manage its VVWs. Similar to the organisational framework of Cambodia, the DLF has provincial offices, which manage district offices. The district offices have direct contact with VVWs. There was an average of one VVW in each of the 11,640 villages in Lao PDR. VAHWs are said to be more active and receive more training near major centres and at locations where there are international projects (Edwards, 2011).

6.3.1.1 Role of Village Animal Health Workers

The VAHWs in Cambodia and Lao PDR deal mainly with pigs, buffaloes, poultry, meat and dairy cattle production. They are the frontline personnel delegated by the government to assess any animal health-related issues, and, in particular, they are expected to investigate, assess and report on suspicion of animal disease outbreaks. The VAHWs are volunteers and they are, most of the time, expected to deliver vaccines and information materials, assist in village meetings and give advice to farmers and traders. They are also requested to submit regular reports to their district animal health officer. There are also times when they are asked to assist in other matters such as the distribution of other government information materials and to assist in public health campaigns. The VAHWs in Cambodia and Lao PDR have confirmed that they do not exclusively assist in animal health matters, but also assist with other issues in their respective villages, particularly public health. This was especially true during the outbreak of HPAI (bird flu).

In terms of the farmers and traders' perception, Cambodian and Laotian farmers described the role of VAHWs as adviser on animal health issues. They also said that VAHWs assist them to treat their animals' diseases. In one of the FGDs among Cambodians, one of the farmers

recalled when "my cattle had FMD, I immediately called the VAHWs. The cattle had blisters in the hooves and in the neck. I discussed this with him and asked him how to treat the cattle and he promptly treatment my animal." Laotian farmers were unanimous that the VAHWs were a source of information about HPAI and information materials. They also said that they approach their VAHWs for advice on general animal health issues. Cambodian and Laotian traders, on the other hand, said they approach VAHWs only to request business related certifications such as health and vaccination certificates.

The NAHOs in both countries also described the primary functions of VAHWs as animal health adviser at the village level. They acknowledge that important role of VAHWs because of the limited personnel of the government. The Cambodian NAHO believes that DAHP is adequately staffed but the VAHWs play an important role in promptly attending to emergency outbreaks. The Laotian NAHO said that the status of the VAHWs in the village is vital in the assistance of their animal health activities. He explained that most VAHWs are senior members of the village and, most often, command respect in the community. "If he calls for a meeting, most people come and listen," the Laotian NAHO explained.

6.3.1.2 Selection and Recruitment Processes

The selection and recruitment of VAHWs relies on a pool of volunteers from the village. It is important that they are willing to give some time in assisting local and national animal health officers in cases of TAD outbreaks or other related animal health campaigns. Most of the VAHWs interviewed in this study were also farmers with livestock and claimed that they had volunteered because they wanted to learn more about animal health and be able to treat their own livestock. Recruitment is usually formalised after the individual attends the introductory training for VAHWs or attends meetings at the district office. The NAHOs said that the selection and recruitment of VAHWs is mostly done at the village level and fully voluntary. The Cambodian NAHO said that DAHP staff usually conduct a province-wide training for new recruits. "However, we do not have regular follow on training for the VAHWs," the Cambodian

NAHO explained. The Laotian NAHO said that they train DAHOs who, in turn, are expected to train VAHWs in their respective districts.

6.3.1.3 Training

The DAHP in Cambodia and the DLF in Lao PDR are responsible for the training of their respective VAHWs. The training topics ranged from disease identification, serological surveillance principles, sample collection, disease reporting and general animal health principles. Most of the time, international non-governmental organisations (INGOs) and intergovernmental organisations such as United Nations-related agencies have assisted the governments in the training of VAHWs. The VAHWs interviewed in this field study claimed that they had little training and most training seminars lasted from three days to a month. Some of the topics included in the training that they had received (both from the government and INGOs) were disease identification and management, disease reporting and assisting in serological surveillance. For many, the only training they had received was the introductory training for VAHWs, which covered animal husbandry disease identification, management and reporting. A Cambodian VAHW said that he had been trained on pasteurellosis, FMD, CSF and cattle vaccination. The most common training that Cambodian VAHWs had was on HPAI, FMD, CSF and vaccination. Most of the Laotian VAHWs had had training on FMD and CSF identification and management and vaccination methods. The most recent training that the majority of Cambodian and Laotian VAHWs interviewed had had was on identification and initial management for HPAI. At the time of the interview, the VAHWs said that they had not had any other training recently and were not scheduled to undertake any follow up training. The VAHWs told me that follow-up training would be helpful for them in the course of their duties. This seems to imply that they do not have regular training. The NAHOs in both countries also confirmed that training of the VAHWs was largely dependent on external funding. They explained that there was no specific training programme for the VAHWs, but any training identified by their national government as a priority was implemented if funding and trainers were available. The Laotian NAHO said that there was an Australian study on animal movement in the country that focused on FMD. That particular study was ongoing when this field study

was conducted. Researchers of that study were investigating factors that affected animal movement and efficient ways of tracking animal movement internationally and locally (Madin, 2010). The Laotian NAHO said that researchers from this study sponsored retraining of VAHWs in selected areas on FMD investigation and diagnosis. It was a complex research study where interventions were also introduced along with some communications technology such as short message systems to facilitate market information exchanges and disease reporting. The most recent training that the VAHWs in Cambodia and Lao PDR received was focused on HPAI and funded by international inter-governmental organisations or non-government organisations. "The FAO has recently conducted training on HPAI for VAHWs," the Cambodian NAHO said. He explained that the training focused on disease identification and reporting. To date, more than 10,000 VAHWs have been trained on HPAI in Cambodia and Lao PDR by various INGOs (S. Burgos, Hinrichs et al., 2008; Sigfrido Burgos, Otte et al., 2008). Other NGOs conducted training for the rest of the VAHWs with a focus on diagnosis and management of TADs.

6.3.1.4 Technical Skills

There is some technical capacity in animal health and communication among the VAHWs interviewed in this study. A Cambodian provincial animal health officer interviewed in the field study, discussed in the last chapter, claimed that, "there is training of trainers conducted once in a while and traders are met with to inform them of the latest changes in policies. Farmers are also given new information." Foreign assistance, at the time of the study, was focused on HPAI and most of the training on the disease and strategies for dealing with it. At the national level, senior animal health officers were always invited to capacity building educational trips, conferences, training and/or seminars. Most of the senior officers are the premier experts in their field in their country. Donors expect them to go around the country and train regional staff who are then expected to train their colleagues. Most of the laboratories in the capital cities of the GMS countries in this study have the basic equipment, technical skills and capacity to confirm animal diseases such as FMD and HPAI, among others. The VAHWs in the countries in this study have had training from their national governments. Discussions and interviews with

the study participants showed that there were many technical skills among animal health workers and volunteers in the villages included in this field study. I wrote in my expanded interview notes how one of the VAHWs expressed satisfaction with his technical skills. Some of the Laotian farmers also expressed confidence in the ability of their VAHW to provide animal health services, particularly the district animal health officers.

In terms of communication activities, Cambodian provincial animal health workers are directly involved in informing various stakeholders on government policies. As stated in earlier chapters, a female Laotian farmer in this field study claimed that VAHWs were the most approachable and fastest way for farmers to receive animal health services. Her statement highlights the importance of the role of VAHWs in grassroots communication, especially in the villages visited in this field study. Again, the expressions of satisfaction among farmers, VAHWs and animal health officers on the level of technical skills among VAHWs are subjective and may only be applicable in the research areas. Technical experts however may disagree on the level of competency among the VAHWs because most of the latter have only received minimal training and retraining.

In addition, there has been no evaluation comparing the skills of the Cambodian and Laotian VAHWs, although most VAHWs in both countries are technically trained on the basic identification and management of important TADs such as HPAI, FMD and HS.

6.3.1.5 Supervision

The VAHWs are considered volunteers and they are not supervised directly when they render services to farmers. In terms of accountability, they are accountable to their provincial or district animal health officer to whom they submit reports. The reports submitted to the livestock department cover disease investigations, vaccination and disease negative monitoring reports whenever necessary. A Cambodian VAHW said that he submitted vaccination reports twice a year, while most of the Laotian VAHWs also submitted vaccination reports twice a year, including animal population data, to their immediate district animal health officer. The prestige

of becoming a VAHW and being the person who distributes and administers treatment, vaccines and medicines ensures that VAHWs submit the report and are accountable to the district animal health officer. I think it is a balancing act for the VAHWs to please their supervisors in terms of providing the necessary reports and to please farmers/traders in term so of providing animal health services. Where their loyalty lays heavily leans more toward with the animal health authorities. This is because the animal health authorities can equip them with the necessary training and materials. The Cambodian and Laotian VAHWs confirmed this when they commonly responded that they "receive" training and materials from the government.

6.3.1.6 Resources and Incentives

The VAHW system is dependent on volunteers from livestock owners in villages and there is no direct incentive from government for the VAHWs in the current system. It was revealed after FGDs with the farmers and traders, and interviews with the VAHWs, that "clients" (farmers/traders) were the ones who provided some incentives to the VAHW. One Cambodian VAHW said that they charge fees when they administer vaccines. He explained that the charge is to cover the cost of ice to transport the vaccine. A Laotian VAHW also claimed that he received a little money from some farmers to cover the cost of transporting the vaccines. There is no obligation for the farmers to pay but VAHWs would often request that the farmers cover the cost of ice to bring, for example, the vaccines. The active pursuit of some VAHWs to "give services to farmers" despite farmers not requesting any services was also observed. Some Cambodian farmers would want to call in the VAHWs only when there was a problem. However, some VAHWs in Cambodia tried regularly to visit farmers to render their services, regardless of whether the farmer needed any animal health services or not. It was noted that most of the visits were paid for by the farmer because the VAHW usually brought in some sample medicines or other tokens such as public information materials or vaccines. Veterinary authorities expected that VAHWs would earn extra income through their services as para-veterinarians. Some Cambodian and Laotian farmers expressed satisfaction during the FGDs with regard to the services rendered by the VAHW and were happy to compensate the VAHWs for "good service". One Laotian VAHW claimed that he asked farmers to buy vaccines

themselves or he would offer to vaccinate the animal for a fee. Some farmers in Lao PDR and Cambodia reiterated that they were satisfied with the services of their local VAHWs and gave money to them "because they (VAHWs) treated their animals' diseases". I also observed that the farmers' attitude to paying for services may be culturally ingrained. It is common among different cultures and countries in Southeast Asia to pay a debt of gratitude. It is a way of showing appreciation to a visitor or for a friend's help. Accepting money or gifts in some Southeast Asian countries is a well-accepted practice and declining such tokens of gratitude could be offensive. However, in most cases, the farmers did not perceive this payment as a fee for a service rendered.

Payment for their service may pose as a conflict of interest for VAHWs because it might compromise their function of reporting TAD outbreaks for fear of affecting the people they depend on for extra income. I also noted that another source of conflict of interest is that they received some materials for free for which they then expected to be paid by farmers/traders. I noted in the transcript that some VAHWs would return to farmers even without the need for their services. One Laotian farmer said during one of the FGDs that "they (VAHWs) come even if our animals are not sick and give us vitamins and medicine samples that we sometimes have to pay for". This was also reiterated by some farmers in Cambodia. The conflict of interest among VAHWs was also noted by an FAO consultant during an evaluation mission in Cambodia (Edwards, 2011).

Another motivation for VAHWs to volunteer is their desire to learn animal health management for themselves. A Cambodian VAHW told me about the death of his animals. He explained "if only I had had the skills and technical knowledge, I would have saved my animals. One day, I got information that an NGO was training villagers as VAHWs". Another Cambodian VAHW said "I want to help the farmers to understand animal raising and disease treatment". A Laotian VAHW explained "I like this work because I live in a rural area. I want to gain technical knowledge and skills in animal raising, treatment, protection, and also earn money from these services to support my family." Among the Cambodian and Laotian VAHWs, it was common

for them to claim that they were motivated by their pursuit to learn more about animal husbandry as well as earning some extra income.

6.3.2 VAHWs' Communication and Self-Education Practices

The VAHWs were asked how they communicate with stakeholders and how they educate themselves. VAHWs in both Cambodia and Lao PDR answered the latter question with a list of training they had attended. The VAHWs actively sought animal health information through posters, television, radio and training (whenever available). Some Cambodian and Laotian VAHWs interviewed in this study claimed that whenever they did research for animal health topics, they usually read up on disease identification and management. They said that they sought this kind of information from communication media, as described earlier. Some were conversant with haemorrhagic septicaemia (HS), bird flu (HPAI), and CSF (classical swine fever); TADs that are endemic in Southeast Asia.

Typically a VAHW seeks animal health information from a number of sources. A Laotian VAHW said that he would "get knowledge from training and improve my knowledge from people with more experience". Figure 6.6 shows the common information-seeking pattern of VAHWs from Lao PDR. The "people with more experience" could range from the most senior member of the farmer in the village to the national animal health officer who sometimes visits the village.

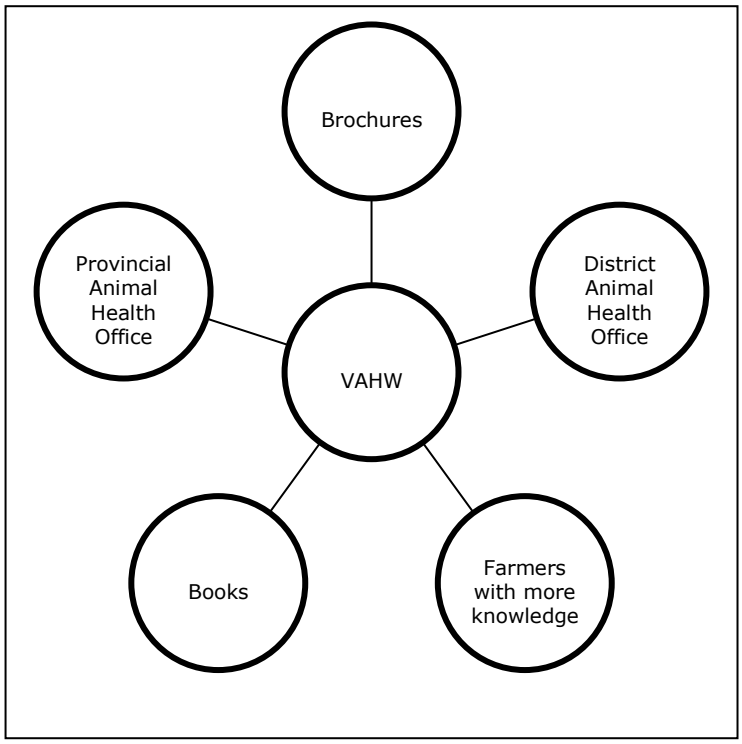

Figure 6.6 General Information Seeking Pattern of Laotian VAHWs

Cambodian VAHWs, on the other hand, sought information on animal health issues from the government, non-government organisations and international organisations. The difference may be due to the active international intergovernmental organisations and NGOs operating in Cambodia compared to Lao PDR. The survey areas in Lao PDR were in rural mountainous areas compared to Cambodia where they were in lowland rural areas near Phnom Penh. This may explain why there was a greater number of information sources accessed by Laotian VAHWs, because there was no expert available most of the time.

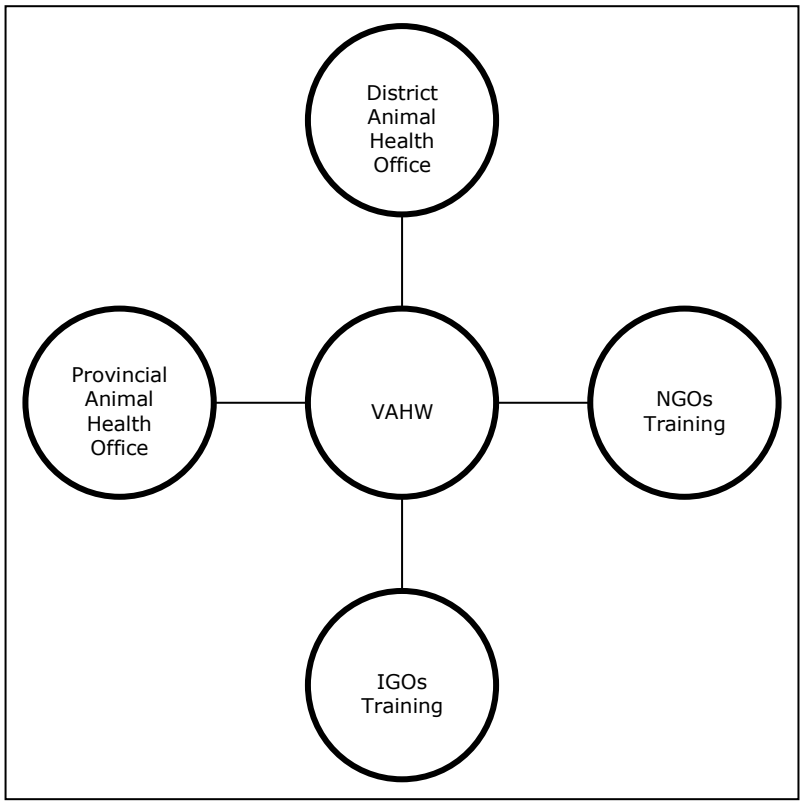

Figure 6.7 General Information Seeking Pattern of Cambodian VAHWs

The VAHWs commonly listed vaccination, data collection and sample collection as communication activities. This is a reality in the field where there is a lack of funding for communication activities and materials. Animal health officers and VAHWs take the opportunity to maximise activities such as vaccination or serological campaigns to engage farmers and address any issues they have about animal health. This strategy however reflects that there is no definite communication strategy in place thus there are some persistent communication gaps. I will detail the perception by the study participants of VAHWs' communication role below. The VAHW system was primarily established to assist in the implementation of animal health services. However, the VAHWs do not have a regular training programme and this may have some implication for their capacity as the most trusted animal health advisers.

Where VAHWs are not fully trained their lack of knowledge will compromise their communication role. This creates a gap in communication about important disease control programmes as the VAHW will not be capable of providing answers to some issues, even basic

ones. This is not to put pressure on the tenet that VAHWs need be well educated and well trained, but rather to note that if there is training available the VAHWs should be able to access it and become equipped to give sound advice to various stakeholders.

6.3.2.1 Engaging with Fellow VAHWs and Supervisors

Some of the VAHWs said that they learn from other VAHWs, for example, how to deal with TADs. Since the VAHWs are farmers themselves, they are at ease dealing with fellow VAHWs. I reported in Chapter 5 what I learned in the transect walk about the regular informal gathering of some of the villagers in the afternoons, both in Cambodia and Lao PDR, when they catch-up with each other and entertain themselves after a day's work. It is during these gatherings that they meet with their VAHW colleagues. Discussion topics varied but whenever needed, it was during these afternoon meetings that they discussed animal health issues arose. The afternoon meetings among the farmers present some communication opportunities for the VAHWs and animal health officers. I will discuss them in detail in the following section.

The VAHWs have high regard for their district animal health officers. However, their engagements with government veterinarians are mostly to do with their work. One Laotian VAHW said "I submit reports to the district vets monthly". It was a common response from the Cambodian and Laotian VAHWs that they contact their supervisor only to submit reports or whenever they are challenged by a certain animal health case or when they suspect a high-risk TAD outbreak such as HPAI. Sometimes, the government veterinarians call them to officially discuss training information, report requirements or other animal health related business.

6.3.2.2 Engaging Livestock Owners

In terms of communicating with farmers and traders, FGD participants in Cambodia and Lao PDR agreed that they could easily talk to their local VAHW because they are "neighbours" or live within the village. As one Laotian farmer put it, "VAHWs are the most approachable and quickest way to get animal health service." They usually meet informally almost every afternoon in the village, usually at the village chief's house. As with their VAHW colleagues, the gathering is their time to catch-up with their neighbours, and sometimes enjoy a coffee or drink. It is also

the time that the VAHW talks to farmers about important announcements from the government and the news is spread by word of mouth. Aside from the regular afternoon meetings in the village some of the VAHWs said that they usually visit the farmers to render services or distribute information materials or samples of animal health supplements. As one Cambodian farmer said, "the VAHW visits us even if we don't need him, he gives us medicines, vaccines and advice". Some of the VAHWs in this field study were reactive in that they only attended to the needs of farmers when requested, while others regularly visited the farmers whenever they could. One Cambodian VAHW who indicated that he regularly visits farmers to check on their animals' health, said that

> "I administer the vaccines to the cattle. Some farmers refused to bring their cattle for vaccination, saying that their cattle don't get sick. They were also afraid that their animals might die. However, after I gave them advice on vaccination, they realise the importance of it because their cattle remain healthy. Now they trust vaccination."

As I learned in some villages, some farmers mentioned bad experiences with regard to vaccination and for that reason they did not have faith in the VAHWs administering it or did not trust vaccination to protect the animal's health. Some farmers tended to be reactive and said that they only call the VAHWs whenever there is an obvious problem with their animals. One Laotian VAHW described his engagement with livestock owners as "frequent but only when needed". Based on my expanded interview notes, the Laotian VAHW "visits the farmers more frequently during disease outbreaks but outside those times, he only visits them to remind them of the vaccination schedule".

6.3.2.3 Self-education

Most of the VAHWs attend seminars offered by the government or NGOs. Some of them also said that their long experience in raising animals is their source of most of knowledge about animal health. As one Cambodian emphasised, "I learn by myself". My Cambodian interpreter

said that most of these VAHWs are respected in their villages for their opinion regardless of whether it is on animal health or other topics. He also said that most of the VAHWs have many years experience in raising animals. A Laotian VAHW said that he practices vaccination with his own animals. He also gets advice from the district extension worker or other more experienced villagers. The most common sources of VAHWs use for skills development include district animal health officers, brochures, radio, television, other experienced villagers, NGOs and the government.

6.3.3 VAHWs Role in Communication

The FGD participants were asked what they perceive as the VAHWs' role in communicating about animal health. Farmers and traders often referred to VAHWs as "animal health advisers", "data collectors", "animal health service providers", "animal health inspectors" or "information material providers" when they were asked about the role of VAHWs in communicating animal health issues. Most of the farmers claimed that they would consult the VAHWs first. They said that they would consult with the district or provincial animal health officers if the VAHW could not answer their questions or address their needs. Most of the farmers in Cambodia and Lao PDR said that they would contact their local VAHWs first because they were more approachable. I noted that since the VAHWs were locals, they were also often drinking friends of the male farmers although they do not usually drink during the afternoon gatherings. Being the 'drinking friend' of some of the farmers made the VAHWs more accessible to most of the farmers in the village. For the women, they said that they could easily call or request the VAHW to assist them. They also join the afternoon gatherings but they do not drink. Some farmers were friends or relatives of the local VAHW. On the other hand, traders went straight to the district or provincial animal health officer for advice on animal health, especially in relation to trading requirements. Laotian traders said that they only needed the VAHW for vaccination certifications and that they did not need to approach the VAHW for any animal health advice. This was understandable as the traders claimed that they were only interested in buying and selling animals. The Cambodian traders did not mention any need for their local VAHWs. In the FGDs, they only mentioned that when transporting their animals they required an animal health

certificate, which was issued by the district animal health officer. The NAHO and district animal health officers described the role of the VAHWs as the first field staff expected to attend and investigate any rumour or report of a TAD in villages.

While communicating about animal health issues some Laotian VAHWs distributed various information materials. This is not often the case in Cambodia. The study participants considered vaccination and other related "technical" activities such as serological surveillance and animal movement management to be part of extension services, or as public awareness activities even if the only engagement they had was just the endorsement of the animal. This was evident in the FGDs among the farmers. A Cambodian farmer explained that district animal health officers only vaccinated their animals and, sometimes, they received information materials. It was common for activities such as a vaccination campaign to be implemented in a quick manner to cover more areas, resulting in virtually no proper engagement of farmers and traders. This scenario is applicable in some cases. The Laotian NAHO said that they most often they ask the farmers to meet in one place after the conclusion of a vaccination campaign to answer questions and provide some education. Other animal health communication activities also carried out by VAHWs were the gathering of statistical data and other data, and the interviewing of farmers. The Cambodian NAHO explained that the VAHWs were asked to assist in interviewing farmers for some socio-economic studies.

6.3.3.1 Trusted Communication Agents

Village animal health workers (VAHWs) still play a key role in delivering veterinary services and engaging other stakeholders with regard to animal health issues as revealed in the discussions with the farmers and traders. However, it also became apparent that their role became secondary when the provincial and national animal health officers were around during meetings, or were more accessible to the farmers or traders. This was especially true among male and female farmers in Lao PDR who said that that they actively sought the advice of the provincial animal health officers, who were accessible to the farmers. The VAHWs in the villages, in turn, relied more on the provincial animal health officers for advice and assistance thus defeating the

purpose of maximising the personnel in the country as the capacity of provincial and district animal health officers was already stretched. While this may only be true for villages near provincial capitals, it nevertheless implies that this situation still runs contrary to the purpose of the VAHW system, which is to fill the gap that national governments cannot fill the gaps in government service provision.

Despite evidence suggesting the role of the VAHWs is deemed as secondary, they still carried out important work in Cambodia and Lao PDR. Farmers in both Cambodia and Lao PDR preferred village meetings as an information source on animal health or animal disease control. One Cambodian farmer noted "we wanted a village meeting so we can ask questions right away and we can discuss with our fellow farmers any issues that we are facing". Formal village meetings usually happened when senior animal health officers visited the village. Other times, however, the village meetings would be a regular occurrence because it was then that farmers would catch up with each other after a day's work. The farmers agreed, however, that if they were to be trained in recognising animal diseases, they would prefer a video presentation as it would be most is helpful for them to see direct visual demonstrations of disease signs and how to manage them. The VAHWs were usually on hand to answer questions raised during village meetings, but they were relegated to facilitating or just opening the meeting if the provincial or district animal health workers were around. Despite this, the VAHWs still played a key role in the campaign (whether communication or veterinary) against animal diseases because farmers and traders, most likely, had follow-up questions after the village meetings, and the VAHWs were the ones left in the village who were able to explain fully what was discussed. In one of the FGDs in Cambodia for this field study, one farmer said "I trust all of them" i.e., referring to the VAHWs, veterinarian and NGOs. He said that NGOs were also good trainers but the farmers always rely on the VAHWs for immediate problems that they encounter regarding TADs. He also said "if we just trust one, one can't fill the shortcomings of the other". Some farmers in FGDs in both countries emphasised the importance of village meetings in times of TAD emergencies.

Kincaid (2000) describes village meetings as a social networking approach to development where key persons were trained to educate grassroots stakeholders in a village meeting setting. He concludes that the social networking approach, as evidenced in a longitudinal study conducted in Bangladesh, achieved better results in educating farmers compared to individual public awareness approaches, which were prevalent in the GMS during the present study. In Kincaid's (2000) study in Bangladesh the effects of individual visits by health workers are compared to a 'jiggasha' meeting (a group discussion among people hosted by a community leader). Study participants in the 'jiggasha' meeting were five times more likely to follow public health communication messages compared to participants who were individually visited by the public health field worker (Kincaid, 2000).

In the GMS, the 'jiggasha' equivalent are the village meetings. The potential of these meetings may be promising for communicating TADs issues, especially if the VAHWs are trained well on TAD identification and management. The NAHOs, who are national coordinators of the FAO HPAI project in both countries, said that the training of trainers was becoming a regular part of animal health programmes, especially in HPAI campaigns. The trainers, especially in Cambodia and Lao PDR, were hired on a casual basis and were trusted by the farmers and traders. They were trained to train villagers on specific animal health issues such as biosecurity, disease recognition and reporting. The training sessions also served as part of the communication activities of the campaign, especially in the GMS. The funding for training of the trainers is provided by foreign donors and it is possible that these initiatives will end when the funding ceases. Thus, the VAHWs may be in a better position to remain in the village and continue the work of safeguarding animal health in the village if they are trained on a regular basis.

I also noted in previous chapters that there was a growing preference among farmers and traders for using television and radio as a superior means of finding answers to animal health issues and the preferred communication media for any animal health communication messages. This was regardless of whether they used TV as their main source of entertainment. It was interesting to note that Laotian farmers regularly watched television, but they seldom watched Lao TV. They

usually preferred Thai TV, especially entertainment or soap opera programmes. As revealed in previous studies, radio and television reached more people in Lao PDR compared to other communication media (Caro, 2006) and radio, in particular, has the ability to reach communities in mountain provinces. The Lao government usually used Lao TV for national news on TAD outbreaks or related animal health issues. If there was any TAD emergency in Lao PDR, the farmers might learn about it too late because they most would likely be tuned to Thai TV. Television is one of the main media channels used in major communication campaigns in the region and if most people are tuned in to a channel that does not provide this information, especially a foreign one, then the Lao authorities may have to rethink how TV strategies are implemented.

6.3.4 Other Factors Affecting Communication at the Village-level

The overall aim of communication campaigns in the selected countries in the GMS was to introduce behaviour change among the stakeholders and empower them to achieve social and economic development. The complexities of these campaigns also meant that there would be other factors that would threaten their effectiveness. I will go on discuss the other factors that I found in the investigation on the communication role and practice of VAHWs that may affect communication at the village level.

6.3.4.1 Gender

Gender is one of the factors that can affect AHC at the village-level. In Lao PDR, this issue was addressed through the involvement of the Lao Union of Women, which ensured greater reach of AHC campaigns, particularly HPAI, and promoted the participation of women. Laotian women who participated in the FGD in this main field study said that the Lao Union of Women cooperated in the implementation of HPAI communication campaigns in their village. All of the women in the FGD were members of the Lao Union of Women. They described the activities that they were involved in as assisting in the distribution of posters, organising village meetings and vaccination activities. The women and children in Lao PDR took care of small to medium-sized animals such as pigs, goat, ducks, chicken and geese. The implication of this on the design

of communication campaigns for HPAI or FMD is that communication specialists or animal health authorities should consider women and children as primary stakeholders. Although the Laotian NAHO showed me some unpublished HPAI communication planning documents that identified women and children as primary focus of strategies, most of the communication materials that were reproduced in the country were focused on the general public. The HPAI communication materials that specifically focused on the role of women and children were the ones produced by UNICEF.

The participation of the Lao Union of Women was a good step towards development communication as stakeholders' participation was encouraged. However, the participation of the women in HPAI campaigns was only limited to the implementation of activities. There was no mention that they were involved in any planning of communication campaigns. I am advocating a more participatory approach to communication and if the participation of stakeholders would only be limited to fill the gaps that some field staff will not be able to fulfil, then this is not yet considered a participatory communication or development communication.

Cambodia has the same situation where women and children were also in charge of raising small to medium-sized animals. During the FGDs in this main field study, the Cambodian men said that they were the ones who talk, most of the time particularly during afternoon gatherings, about animal health issues. Cambodian and Laotian women participants of this main field study said that they usually discuss animal health issues particularly when there is an outbreak. They said that they consult the VAHWs or their district animal health officer if they needed some advice.

Bagnol (2009) highlighted the importance of understanding women's role in livestock raising to improve the effective promotion of biosecurity measures. She argues that animal health authorities tend to treat communities as "homogenous bodies" and most activities are attended by men (Bagnol, 2009). Animal health authorities treat these "homogenous bodies" as male and do not consider that women and children are involved in the livestock industry. This sometimes

results to strategies and communication campaigns suited to men. Bagnol (2009) underlined the need for suitable strategies after they pre-tested information materials in Lao PDR. Women were identified as responsible for looking after medium and small animals that included chicken. They were presented with HPAI information materials with a man reporting an incidence. The women associated the information materials with commercial poultry-raising and they did not identify with it. The poster was later modified that showed a woman reporting an HPAI outbreak.

6.3.4.2 Culture and Ethnic Community Membership

Shirato and Yell (2000) argue that communication should be understood within specific cultural context. They define communication as "the practice of producing meanings, and the ways in which systems of meaning are negotiated by participants in a culture" (Shirato and Yell, 2000, p. 1). They explained that culture is the "totality of communication practices and system of meaning" and that cultural literacy is "a knowledge of meaning systems and an ability to negotiate those systems within different cultural contexts" (Shirato and Yell, 2000, p. 1). Cultural literacy, therefore, is needed when studying and trying to understand cultural contexts. Hickler (2007) in his study tried to do just this specifically emphasising that messages should be connected with the community's culture and religion.

In Cambodia and Lao PDR, family well-being and prosperity are two of the tenets to good living in Buddhism (Hickler, 2007). This was also confirmed in this field study as the majority of VAHWs stated that their primary motivations to volunteer as VAHW was their willingness to assist their fellow farmers with their animal health needs and improve family well-being. There were also some tribes that we visited where the small animals, particularly poultry, played a key role in offerings or in special occasions. Raw blood remains a special delicacy in most of the mountain villages that we visited. This strong cultural tradition is something which may prove to be a significant hindrance to animal health authorities in their efforts to change behaviour. Participants also deem drinking of blood as a great way of celebrating a milestone or a guest just as Westerners have champagne during special occasions.

There are a diverse range of ethnic groups in Cambodia and Lao PDR, including a Muslim ethnic group in Cambodia and a number of ethnic groups in Lao PDR, as identified in Chapter 4. An implication for animal husbandry with the Cambodian Muslim ethnic group is that any discussion of swine should be avoided. It also follows that any FMD communication that may contain photos or reference to swine should not be presented to this ethnic group or other Muslims because of their abhorrence of the animal. The diversity of ethnic groups also presents a challenge in designing messages appropriate for the cultural norm and languages. Such diversity thus infers added cost if implementers are to customise each campaign for each ethnic group or region.

Statements from the VAHWs suggested how culture affected their decision to assist in the campaign against TADs. A Cambodian VAHW said that "I volunteered because I want to take care of my own and be able to assist my fellow farmers." One Laotian VAHW also aired the same opinion and said "I feel happy assisting my fellow farmers and I really wanted to treat animals." I discussed in the last chapter that it was Hickler (2007) who first found that culture and religion in Cambodia affected how animal health communication messages should be designed. The statements from the VAHWs show the innate goodness in their motivation to serve their fellow villagers. One of the tenets that Theravada Buddhism, which both countries practise, is their belief in cause and effect thus most of the VAHWs expressed that they were doing their duties out of goodwill presumably to earn good luck for themselves. Communication specialists or animal health authorities can appeal to this emotion when recruiting VAHWs.

6.3.4.3 Funding

The governments of Cambodia and Lao PDR are very dependent on external funding particularly in their animal health programmes. The Cambodian NAHO believed that the Department of Animal Health and Production (DAHP) was "adequately staffed and they (staff) capable of serving the department (DAHP), however, it is plagued with funding problems". The lack of honorarium from the government might be one of the reasons that VAHWs were

encouraged to give "unwanted" services to farmers. Some Cambodian and Laotian farmers expressed surprise that their local VAHW sometimes visited them even if they had no need of their services. Although my field notes indicated that some of the VAHWs said that they actively give animal health advice, vaccine or information materials to farmers in their village to earn some extra income, the farmers may have failed to understand the importance of advice on preventing diseases because of the failure of VAHWs to communicate this. On the other hand, it was the government's aim for the VAHW to have extra income aside from their main source of living, farming.

Many VAHWs consider being able to participate in government animal health training as a privilege and compensation in itself. One of the VAHWs said "I volunteered because I wanted to learn how to raise my animals for the family. I am thankful to the government for this privilege." One of the Laotian VAHWs also reiterated his satisfaction in being one of the VAHWs in the village. There is no monetary compensation for volunteer VAHWs, but most of them were happy to be supported by their community, in kind or in cash, whenever they render their services. This is important as Cambodia and Lao PDR are poor countries. The governments in both countries may not be in a position to include every VAHW in their country on the government payroll and this may not be feasible or sustainable in the long run. However, there could be some conflict of interest for some VAHWs as I suggested early in this chapter. The prospect of VAHWs not reporting TADs to ensure they have a constant source of extra income is a distinct possibility.

6.3.4.4 Language

Despite largely speaking one language in their country, Cambodia and Lao PDR animal health services had had some problems regarding the language used in communicating messages about TADs. Terms for "chicken disease" and "cattle disease" were potential problems. Hickler (2007) had identified this problem in Cambodia and I observed this during the FGDs in this field study. Farmers in Lao PDR noted a certain "cattle disease" that was killing some cattle but they could not identify it as FMD because of very confusing clinical signs, which may have led to

differential diagnosis or mistaking a disease with a similar clinical sign as other diseases. The district animal health officer in Lao PDR admitted that they have challenges in communicating with some ethnic groups in their area because they speak a different dialect. I observed that the VAHW serving the community was not an ethnic group member. This may pose a problem to the VAHW because of the language barrier and the cultural gap. Cambodian farmers mentioned a general term that they use for "chicken disease". The disease described was not HPAI but may be Newcastle disease according to the animal health officer that accompanied me. Problems in disease terms also became evident in one of the FGDs in Lao PDR. The Laotian farmers referred to a chicken disease that they call '*thay ha*'. A Laotian farmer explained that "we don't know any information about the diseases, if our chicken dies, we call the disease that killed it *thay ha*". This example poses some problem in disease investigation because, most often, the farmers do not have any idea what the clinical signs are.

The next chapter discusses the evaluation of the communication campaigns in Cambodia and Lao PDR with a special focus on FMD and HPAI.

CHAPTER SEVEN
EVALUATION OF TWO COMMUNICATION CAMPAIGNS FOR TRANSBOUNDARY ANIMAL DISEASES IN CAMBODIA AND LAO PDR

This chapter details the results of the evaluation of two communication campaigns. It investigates factors affecting communication about TADs and assesses the effectiveness of communication campaigns in Cambodia and Lao PDR. The previous field studies contributed to this part of the research by providing background information on the study participants and identifying themes for campaign evaluation.

7.1 INTRODUCTION

I base my evaluation of the communication campaigns in Cambodia and Lao PDR on the perceptions of study participants and give an account of ongoing activities at the time of the study. I also use my personal knowledge, related studies, unpublished documents and results of the previous field studies in this research to assess the effectiveness of communication about FMD and HPAI. These two campaigns were selected because both have been the focus of communication programs in these countries, and FMD is highly transmissible disease of animals while HPAI is a zoonotic[18] disease. Evaluation of communication campaigns is considered to be a challenging task. In Chapter 2, I discussed these challenges in the context of a number of factors affecting communication campaigns. I explained in that chapter how I addressed these issues.

[18] A disease that can be passed between humans and animals.

It is envisaged that outcomes from this evaluation can be used in the future to study the effectiveness of communication campaigns for TADs in these countries and how the nature of diseases (epizootic vs. zoonotic) can affect animal health communication. Using the outcomes of the evaluation, an attempt to answer the following questions will be made:

- How effective are programs for communication on FMD and HPAI in Cambodia and Lao PDR?
- Are FMD and HPAI communication programs consistent with their program plans?
- How could animal health communication strategies be more effective?

At the regional level, the FMD and HPAI communication campaigns have variable levels of technical and funding support from international and non-government organisations. For example, the SEACFMD campaign has a regional FMD communication campaign in Southeast Asia and staff from the SEACFMD campaign encourage and assist with some FMD communication activities in member countries. Funding for communication activities is very limited and depends on the capacity of member countries and small amounts of donor support. On the other hand, the Association of Southeast Asian Nations (ASEAN) Ministers of Agriculture and Forestry (AMAF) formed the ASEAN HPAI Task Force and this is actively working with the United Nations System Influenza Coordination (UNSIC), which is the lead organisation coordinating the collective effort against HPAI by UN organisations. The UNSIC is actively involved in providing technical support for the HPAI campaign in the GMS, including communication campaigns. At the regional level, there is substantial donor funding available to the HPAI campaigns and significant amounts of communication materials produced and distributed.

At the country level, there is lack of technical and funding support for both FMD and HPAI campaigns. In terms of TAD management, DAHP in Cambodia and the Department of Livestock and Fisheries (DLF) in Lao PDR manage the FMD campaign while a multi-ministry team in Cambodia and Lao PDR manages the HPAI campaign because of its complex nature. In Cambodia and Lao PDR, the country level campaigns against FMD and HPAI are politically supported; however, operationalising most of the objectives of the campaign has proved to be a challenge due to lack of technical skills and funding in both countries. The limited resources for animal health also cause an over-reliance of both countries on external funding, thus undermining the sustainability of animal health strategies. Some of the donors for the FMD and HPAI campaigns in Southeast Asia included the United States Agency for International Development (USAID), the Australian Agency for International Development (AusAID), the European Union (EU) Commission, the World Bank, the Asian Development Bank (ADB), Food and Agriculture Organization of the United Nations (FAO) and the World Children's Fund (UNICEF).

The results of some relevant communication evaluation studies in animal health were presented in earlier chapters. The CARE (2005) survey confirmed that there was relatively high awareness of HPAI among farmers and traders. However, they continued with risky behaviours. Results from the CARE survey also confirmed that VAHWs were some of the most important communication agents and that farmers and traders wanted more information on HPAI.

Hickler's (2007) study used qualitative tools to investigate the effectiveness of the HPAI campaign in Cambodia. One of the highlights of his study was the confirmation of risk-taking behaviours among farmers and traders in Cambodia despite being regarded as highly aware of HPAI. Hickler (2007) found that one of the reasons for the continued risk taking was the confusion around the Cambodian Khmer term for HPAI. Alders and Bagnol (2007) also used a qualitative approach to evaluate a communication strategy in Africa. They recommended the pre-testing of information materials to ensure that they made sense to grassroots stakeholders. They implied that there was a need for a more participatory approach in communicating animal

health issues by recommending the FAO P-process for implementation stages, which was adapted from the Johns Hopkins Center.

The aims of the research in this chapter are:

- To evaluate and compare the effectiveness of FMD and HPAI communication programs by evaluating the perceptions of study participants from Cambodia and Lao PDR; and,

- To investigate the effect of the nature of transboundary animal diseases (zoonotic vs. non-zoonotic) in communicating about animal health.

In the following sections, I will make a general assessment of communication campaigns in both countries. I will then discuss the characteristics and the evaluation of FMD and HPAI communication campaigns in both countries. I will also discuss the other factors that affect both campaigns and will detail initial recommendations for improving their implementation.

7.2 METHODOLOGY

The study described in this chapter is the second part of the main field study that was detailed in Chapter 6. The methodology, tools used and participants in the investigation were described in that chapter. Data for this analysis was obtained from several sources that included FGDs and semi-structured interviews in this main field study together with results from Chapters 4 and 5. I will evaluate the two campaigns using the data from different sources such as the literature and unpublished reports and the perception of study participants in this main field study.

7.3 RESULTS AND DISCUSSIONS

The communication campaigns in Cambodia and Lao PDR have similarities and differences, which I will detail later. Generally the campaigns appear ineffective because the study participants are not motivated to follow some animal health messages and there are only a few

participants, particularly farmers and traders, who are knowledgeable of both clinical signs and government campaigns. I will explain these in detail in the later sections. Study participants describe communication activities as vaccination, data collection and sample collection, which may not be considered as communication activities but are opportunities to communicate with stakeholders. I evaluate the communication activities such as the use of mass media, traditional and alternative media, and how animal health authorities utilised technical activities such as vaccination, serological surveillance, animal movement management and data collection as opportunities to engage grassroots stakeholders. I consider these as part of the FMD and HPAI communication campaigns in Cambodia and Lao PDR, which I evaluate and detail in the following sections.

7.3.1 General Evaluation of the Communication Campaigns

What is a communication campaign? In most cases, study participants described animal health communication as education, animal health services, training or technology regardless of whether the campaign focused on FMD or HPAI. The public awareness strategies in both countries followed agricultural extension approaches, meaning they were designed primarily to educate the stakeholders. In Chapter 2, I described how agricultural extension activities consisted mainly of one-way communication, and lacked the engagement of grassroots stakeholders. There were challenges in funding animal health programs; thus there were limited funds for communication activities. So, while there are efforts to implement more complex communication strategies, animal health authorities were limited to cost-efficient strategies even though these were usually not pre-tested or evaluated, such as mass production of information materials, radio programs, training programs, or village meetings. Most of the people involved also lacked training or experience in communication. As I compared the communication objectives against the results of this study and the other field studies described in the previous chapters, I found that there is also some inefficiency as the campaigns may not be directly responsible for the existing TAD awareness of farmers and traders. I will explain more on this matter later.

7.3.2 Animal Health Communication Services

In this section, I present the results from the evaluation of the communication campaigns in both countries. Communication activities in both countries were similar as both used mass media that were mostly not pre-tested or regularly evaluated, and the activities were not participatory in nature. Both countries' livestock departments rely on the assistance of agricultural extension staff, who also support the agriculture ministry's efforts to educate and communicate ministry achievements and general agriculture campaigns to stakeholders. Usually the livestock department receives limited assistance for the needs of their communication campaign, particularly if there is limited or no funding available. In earlier chapters, I detailed comments in which the Cambodian NAHO expresses satisfaction with the number of staff in DAHP but complains about inadequate funding. It is most common in Cambodia and Lao PDR for livestock departments to lack funds or personnel. Most of the farmers and traders were satisfied with the communication and animal health activities implemented in their areas.

7.3.2.1 FMD Communication

The FMD campaign may be considered as one of the first TAD campaigns to highlight communication as a key component in Southeast Asia. The combination of aggressive technical strategies and complex communication strategies saw the eradication of FMD in some countries such as Indonesia and the Philippines (OIE, 2007b). The endemic nature of the disease, however, required sustained technical and communication activities. This section provides further details about, and evaluations of, FMD communication campaigns in Cambodia and Lao PDR.

7.3.2.1.1 Objectives

The FMD communication campaigns in both countries were intended to promote disease awareness and policy compliance among stakeholders in the GMS. Member countries of the SEACFMD campaign agreed, in principle, to "target public awareness to a wide range of stakeholders in the public and private sectors…using all forms of media" (OIE, 2007b, p. 23). Each country considered in this research submitted a FMD communication plan to the OIE-

Regional Coordination Unit (OIE-RCU). The OIE-RCU coordinates the SEACFMD campaign (OIE, 2007a). The NAHO in Cambodia confirmed that they complied with a requirement by the SEACFMD for each of its member countries to submit a series of public awareness and communication plans that addressed the other components of the SEACFMD campaign including public awareness and communication itself (OIE, 2007a). The plans, while not binding, were the basis of regional cooperation and sometimes funding. The aim of the regional communication component is "to develop a communication approach that allows for effective implementation of the SEACFMD programme" (OIE-RCU, 2007). Its specific communication objectives ranged from information exchange among the member countries to encouraging grassroots participation in the planning of communication strategies. If we look closely at the objectives presented here, the plan aims for increased awareness of FMD and behavioural change to "allow effective implementation of the SEACFMD programme." The function of the OIE-RCU is coordination and policy guidance. The regional communication strategy serves as a guide for member countries to fund and design their own FMD communication strategies.

7.3.2.1.2 Activities

The FMD communication activities in Cambodia and Lao PDR were composed mainly of mass media strategies. Most of these activities were supported externally in terms of technical advice and, sometimes, financial support. The OIE-RCU supports one or two communication activities in some member countries; however, it is generally the responsibility of member countries to implement and source funds for their national FMD communication strategy (OIE-RCU, 2007). The communication activities that the OIE-RCU funds in member countries have included the production of various communication materials and training of VAHWs. Cambodian and Laotian farmers and traders confirmed that they had received a number of information materials such as brochures, posters and booklets.

There were only a few documented FMD communication activities implemented in Southeast Asia. Most of the communication activities of member countries focused on increasing awareness or educating farmers and traders on TADs, and production of a number of

information materials including billboards, posters, radio and TV public service announcements (PSAs). Most communication activities in the GMS would be formally documented if they were internationally supported or if they were mainly evaluative in nature (Alcos et al., 2002; Caro, 2006, 2008; OIE-RCU, 2007). The strategies were mainly top-down because the majority of these activities originated from the national government and were "transmitted" to the line agencies of the department of livestock in both countries, then cascade down to the audience. Some of these activities were neither pre-tested nor evaluated. A review of the literature finds that the membership of Cambodia and Lao PDR in the SEACFMD campaign influenced how the national communication policy was developed in each country. The Cambodian and Laotian NAHOs admitted that there were challenges in operationalising the plans. In addition to the challenges of implementing the plans, most of the funding was dependent on the capacity of the member country and on project or donor support, whether monetary or technical. The Cambodian and Laotian NAHOs said that they had customised the public awareness plans by including only components of the SEACFMD campaign applicable to them. The member countries reported[19] the need to better engage farmers; however, terms such as "participatory approaches" to communicate FMD issues to various stakeholders or any similar description were never documented in any meeting proceedings (OIE, 2007a).

The Cambodian NAHO said "we do public awareness when we have a project. Also, the Department of Animal Health [and Production] (DAHP) also has an extension service…they produce T-shirts with messages on FMD, you know, 'super cow' and also leaflets, booklets and also posters, so they provide [communication materials] to the provincial chief." The Laotian NAHO, on the other hand, said that the extension department of the Ministry of Livestock and Fisheries (MLF) never assisted the livestock department because they were more focused on assisting the crop sector. In terms of communicating animal health regulations, the Cambodian NAHO explained that,

[19] (See OIE, 2007a, 2008, n.d.)

> when the ministry decides on giving out any announcement or regulation, they make a copy to the Department of Animal Health and Production (DAHP). The department then sends all the copy to the 24 provincial chiefs of animal health production and the chief has to make a copy of this regulation and give to the trader.

When I interviewed a provincial animal health officer, he explained that he usually invites the group of stakeholders and meet them to inform them of any new animal health regulations or announcements from the ministry or department. He explained that the meeting usually takes place in his office and on an as-needs basis. There are some risks of misinformation in this kind of public awareness activity because most of the time, there is technical jargon in the ministry written memos or decrees. And while there may be no technical jargon involved in the meetings, increased awareness may not prevent some of the farmers and traders illegally moving animals. Cambodian and Laotian farmers and traders said that they have avoided animal quarantine checkpoints mainly because of the "ridiculous requirements to move livestock." A Laotian DAHO confirmed that there were a number of requirements for the movement of animals, both inter-provincially and internationally. In Lao PDR, some of the requirements included vaccination certification by the VAHW, animal health clearance from the district animal health office and animal health movement certificates from the provincial animal health office. Such measures are often felt to be unreasonably excessive and bureaucratic by the farmers and traders affected.

In terms of strategy, the OIE recommends a holistic approach to communication that is guided by the principles of organisational communication and development communication (OIE, 2008). Organisational communication, in the context of the OIE-RCU, is the promotion of communication between countries and within the department or ministry of each country to facilitate disease information exchange and better delivery of services. Development communication strategies such as strategic communication and social marketing were adapted to engage various audiences such as the private sector, traders, farmers and policy makers. The

latter aims to reach grassroots stakeholders and eventually address the problem of TADs. Despite strategies showing some leaning towards a participatory approach, it has become apparent that this is not generally the case in the field and I will explore this further below.

I noted during the exploratory and main field studies that a number of posters, leaflets and brochures were distributed in the villages. The farmers and traders also claimed that some of them had had training on recognition and management of animal diseases from the government, but not on a regular basis. The Cambodian and Laotian NAHOs also mentioned mascot campaigns in their FMD and HPAI communication campaigns. I will discuss and evaluate these programs later in this chapter.

Based on the FGDs with farmers and traders, and interviews with the NAHOs, VAHWs and district/provincial animal health officers in this research, the following are some of the public awareness strategies used in FMD communication campaigns:

- Mass media: radio, television, community radio, internet
- Print media: leaflets, posters, booklets, billboards, newspapers
- Alternative media: theatre, mascots, interpersonal communication, meetings, training.

Overall, the participants of this study were satisfied with the communication campaigns on FMD but they insisted that they still needed more information in managing the disease. Most of the farmers and traders in Cambodia and Lao PDR described the AHC activities as consisting of "training posters, newsletters, vaccination, (blood) sample collection, radio and television." To Cambodian farmers and traders, animal health communication meant training, while Laotian farmers and traders described it as meetings and distributing information materials. The Laotian farmers and traders also described AHC as "posters, radio and television." Both the farmers and traders in Cambodia and Lao PDR also considered animal health services such as vaccination or treatment of sick animals as communication activities. In the FGDs, farmers and traders

described these activities as a time to consult with either the VAHW or the district or national animal health officer. They said they usually requested the VAHW to visit only when they needed them or when their animals were sick. The training and distribution of information materials were not considered to be a regular activity. Some of the farmers and traders requested more information but in terms of FMD they often believed that they had enough.

The VAHWs and the NAHOs described animal health communication as consisting of information campaigns and training programs. To the study participants (farmers, traders, VAHWs and NAHOs), the FMD campaigns were designed to educate, train and inform. They described both campaigns as consisting of information materials, radio or TV programs and visits from village or government animal health workers. Most of the VAHWs in Cambodia and Lao PDR claimed that they met with the farmers whenever their services were needed, confirming the farmers and traders' comments. The Cambodian NAHO described communication activities in his country as spearheaded by agricultural extension staff. He noted that most of the activities of the agricultural extension staff were crop related. There was some focus on animal health when there was funding from the national or international organisations, for example, the United Nations-related agencies such as the FAO, World Children's Fund (UNICEF) or World Health Organization (WHO). Without funding, there would be no assistance from the agricultural extension staff for any animal health communication activities. The Laotian NAHO claimed that they did not receive any assistance from their agricultural extension colleagues in implementing animal health communication activities. He described the public awareness activities of the livestock department as consisting of media conferences, distribution of information materials, TV and radio PSAs, and village meetings. The use of radio and TV PSAs were limited because of the cost of production. The services that the Laotian ministry received from the agricultural extension department focused on print materials production, such as a ministry newsletter and other media relations print materials. The lack of funding for extension activities may have limited the services that the agricultural extension officers were able to extend to other departments of the ministry. The HPAI communication activities in Lao PDR were funded and technically guided externally.

It was revealed, after discussions with farmers and traders and interviews with provincial/district animal health workers that government communication strategies followed a top-down approach—from the national down to the grassroots level. A similar approach in the communication campaigns in the region was also identified in Chapter 2. I found after discussions with the study participants that some of them had undergone, or wanted to undergo some training. Training that was undertaken was focused on HPAI identification and management. As mentioned, VAHWs, farmers and traders said that they needed more information on topics such as FMD or HPAI. This may indicate a lack of evaluation of the training conducted because if there had been any evaluation, a need for further training would have emerged. There was no real engagement of the farmers or traders because the primary aim of the training was simply to educate or provide public awareness. Animal health authorities engaged some of the study participants in terms of ensuring that they understood what was taught by asking them during the training sessions whether they understood the lesson. However, whether there is real engagement in terms of ensuring that the participants were able to apply information is unknown. Evaluation methodologies were vague. The only gauge of effectiveness of the strategies implemented, including what was considered as "communication activities," was the number of outbreak reports from the field.

As discussed in Chapter 2, the FAO recommended that countries adopt the P-process in implementing communication activities. However, as exemplified through discussions with the study participants, the adoption of the P-process in the field had yet to be realised. Overall the information campaigns were reactive in nature, meaning information was given only when it was needed. If there was no animal disease outbreak there would be no information campaign unless funding was provided. However, most of the participants in this field study were familiar with the HPAI campaigns and activities that were held in their area or country.

Most of the Cambodian and Laotian farmers claimed that if they were given a chance to participate in the planning, monitoring and evaluation of animal health programs, they would participate. Some Laotian farmers were not too keen to participate but they claimed that they

would elect a representative to take part on their behalf if needed. Both the Cambodian and Laotian farmers wanted to participate so that they could learn to treat their animals on their own.

7.3.2.2 HPAI Communication

The HPAI campaign is one of the most expensive undertakings by the international community. The zoonotic nature of the disease prompted the international community to take a multi-disciplinary approach to addressing the disease. The strategy to tackle HPAI in Southeast Asia was modelled after the SEACFMD strategy and the objectives of the HPAI communication campaign were similar to FMD—to increase awareness of the disease and elicit behavioural change. The communications team of UNICEF led an inter-agency task force worldwide.

7.3.2.2.1 Objectives

The main objective of the HPAI communication campaign was to improve communication systems, specifically strengthening capacities for outbreak and risk communication (Wilsmore et al., 2010). Communication was not only defined as communication with grassroots stakeholders but also as that which occurs between experts and countries (Wilsmore *et al.*, 2010). This suggests that communication activities encompass not only stakeholder communication but also organisational communication as I have described earlier. Specifically, the HPAI communication campaign aims to:

- Strengthen the capacity of and cooperation between district and VAHWs and public health workers in the prevention, control and management of HPAI;
- Raise awareness on the part of the local community—including children—to promote safe household and small-scale farming practices and increased hygienic behaviour to prevent the transmission of HPAI;
- Establish best practice areas for trading and handling of poultry in markets; and,

- Strengthen the ability of provincial and district level animal and public health services to prevent, contain, and/or manage HPAI through the provision of personal protection equipment (PPE) (CARE, n.d.; COMMINIT, 2011).

These objectives, while awareness was mentioned, are mainly aimed at changing behaviour towards the adoption of safe farming and hygienic lifestyles.

7.3.2.2.2 Activities

The ASEAN HPAI Task Force had identified the public as a key partner in its roadmap plan to HPAI-freedom in Southeast Asia. The ASEAN HPAI Task Force's public awareness and risk communication component emphasised the need for "participatory public awareness approaches" (ASEAN, 2010a, 2010b). However, the Cambodian and Laotian NAHOs told me that there were problems in the operationalisation of plans against TADs, particularly with the implementation of communication activities. Funding and technical constraints impeded the implementation of communication activities even for technically well-supported and well-funded TAD campaigns. The Cambodian and Lao PDR governments funded the overall HPAI campaigns well compared to other TADs; however, communication activities themselves were not funded or technically supported from governmental sources. Most of the HPAI campaigns in Cambodia and Lao PDR were foreign-assisted and there were doubts about the sustainability of these activities should funding cease. The foreign-assisted HPAI communication campaigns used mass media and alternative media such as television, posters, social mobilisation, mascots, radio and theatre.

The campaign against HPAI is one of the most expensive campaigns in animal health. This is, in part, due to the zoonotic nature of the disease. The FAO estimates that funding for the global campaign against HPAI in the veterinary field was about US$882 million excluding compensation (FAO, 2006b). The funding for communication activities within this figure is uncertain and there are ongoing concerns that it may be insufficient. Despite these concerns, GMS countries were able to implement communication strategies based on experiences in other countries. Common information materials used in the GMS countries included billboards,

leaflets, posters, radio and TV PSAs, and the training of VAHWs. The communication strategies were built on FMD communication plans. This is the reason that the FMD Sub-Commission meetings became venues for discussion of HPAI strategies in the GMS. The discussions also included HPAI communication. The communication strategies presented by SEACFMD member countries were also based on educating stakeholders and improving their awareness, and focused on producing various information materials such as posters, leaflets, billboards and production of TV and radio PSAs. There were no regular evaluations of these communication campaigns and only few studies have evaluated HPAI communication activities in the GMS (R. G. Alders and Bagnol, 2007; FAO, n.d.; Hickler, 2007).

In this field study, it was found that the HPAI campaigns in both countries used mascots to educate or increase awareness among the public and promote market safety. Both Cambodia ("Super Moen") and Lao PDR ("Super Kai") used "Super Chicken" mascots to increase HPAI awareness among the general public. "This campaign is similar to your 'Super Pig' campaign," the Cambodian NAHO told me during the interview, referring to the Philippines' mascot campaign. I discuss and evaluate mascot campaigns in detail in a separate section in this chapter. The majority of the farmers and traders in both countries were aware of the campaign against HPAI. Despite this they were still asking for more information. Some of the study participants were so afraid of HPAI that they reassured themselves by hoarding information materials. They said that by doing so, they would know what to do in case of an emergency. "We are aware of FMD and bird flu (HPAI), but we need more information on bird flu (HPAI), and more training" was a common reply in the FGDs in Cambodia and Lao PDR. The tendency of farmers and traders to keep more information materials on hand than was necessary may also indicate the enormous amount of data that they had to remember or learn about HPAI at one time.

To assess the feasibility of a participatory approach in animal health, the farmers and traders were asked if they were willing to participate in the planning, implementation and evaluation of animal health strategies. Some Laotian farmers said "we want to participate, so that we can learn

how to treat our own animals". Cambodian farmers claimed that they were willing to participate and assist in animal health programs but some clarified that their participation would be limited to supporting roles. I have noted that the farmers did not have a clear idea of how to involve themselves in implementing animal health programs and were satisfied with the government taking the lead role in implementing animal health strategies. They expected that the government would be there to provide technical and material support to them for use in the control of TADs, particularly HPAI. As mentioned above, the ASEAN HPAI Task Force emphasised the need for a more participatory approach by recognising the key role of the public in the implementation of public awareness activities. The Cambodian and Laotian NAHOs described said that they have used "meetings and asking them [farmers and traders] what they needed" to encourage participation among the grassroots stakeholders. However, this happened simply during as-needed meetings, such as when there were TAD outbreaks.

Most of the farmers, traders and VAHWs expressed general satisfaction with the government animal health communication services. They said that they "have more materials and activities focusing on HPAI as most communication campaigns that they were aware of focused mainly on this disease". Despite this, they still felt that they do not know enough about HPAI and that they often requested more information materials. In particular, most participating farmers in the FGD said that they need "more materials and training especially on HPAI". They explained that they do not have enough knowledge in identifying and managing HPAI. The Cambodian NAHO noted that HPAI communication campaigns received more funding because of their zoonotic nature. This resulted in more extensive activities in the country. The Cambodian Provincial Animal Health Officer said that "there were special training programs for trainers, the trainers train farmers and traders in identifying, reporting and managing HPAI", suggesting that strategies implemented in the field followed an agricultural extension approach. The Laotian NAHO also confirmed that there were more HPAI communication activities in the country.

7.3.2.3 Awareness about TADs and Knowledge Among Study Participants

The FGDs and interviews in this field study indicated some awareness among the study participants; however, there were some indications that they were not confident with the knowledge that they had. This may confirm what I found in the KAP survey, where despite the intensive public awareness activities in the region, there were only a few villagers who could be considered knowledgeable about CSF, FMD and HPAI. This means that overall and despite the public awareness focused on TADs, especially HPAI, and claims of awareness of TADs among the study participants in this chapter, knowledge of clinical signs of TADs and disease management in the GMS is low.

It was found after further analysis of some data from the KAP results from Cambodia and Lao PDR that, at best, about 32% of participating farmers and 77% of VAHWs who claimed awareness of TADs and their clinical signs were actually able to correctly correlate a particular TAD to its associated clinical signs (see Figure 7.8). Those who claimed awareness and identified the correct clinical signs were then asked whether they were aware of specific current government TAD programs. This was to probe whether they were aware of any government TAD program, which also meant that they had benefited from the campaigns, whether through services or communication materials. This would mean that they had effectively been reached by that particular TAD program.

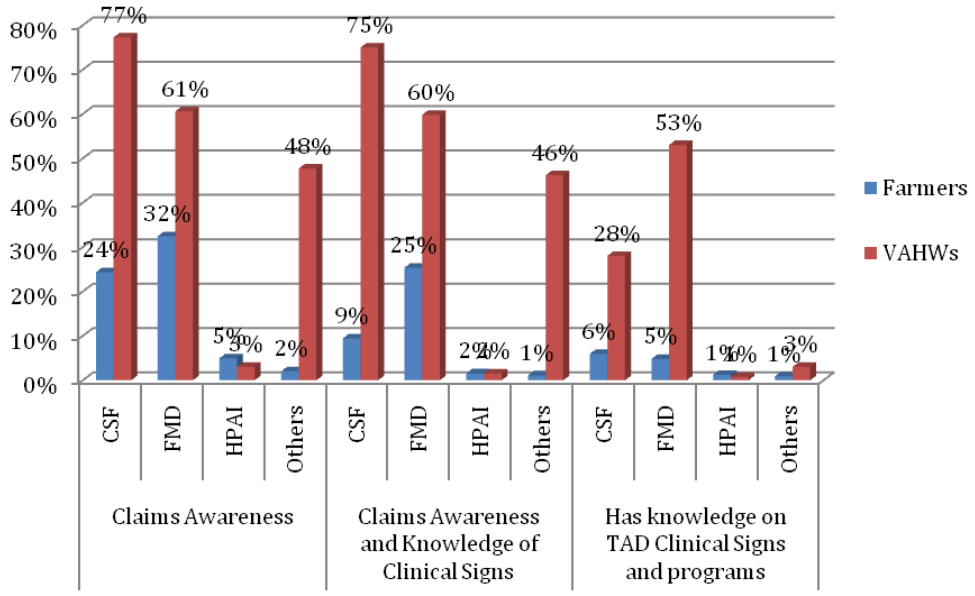

Figure 7.8 Probing about TAD awareness of KAP Study participants in Cambodia and Lao PDR

Figure 7.8 shows that while there was some awareness among the study participants in Cambodia and Lao PDR, in the context of this research, knowledge of CSF and HPAI was relatively low among farmers. When further asked if they were aware of government programs on TADs, only a few of those who said that they were aware and knowledgeable about TADs were able to claim that they were aware of one or more diseases. Hickler's (2007) study could explain the reason for the seemingly low awareness of HPAI of participants within this study. The KAP survey was conducted before Hickler's study and at the time of the survey, the terms used for HPAI were the ones endorsed by both governments. The Laotian NAHO told me during the KAP survey (Chapter 4) that farmers were associating HPAI with an "old chicken disease" meaning they had one term for a chicken disease regardless of whether it was HPAI or not. The Laotian NAHO failed to confirm whether the disease was confirmed either ND or fowl cholera. It is not known whether this was actually true in other parts of Lao PDR or whether it had had any effect on the awareness of the farmers, traders or the general public. Hickler (2007) was able to confirm that the term used for HPAI in Cambodia had something to do with the risky behaviour of farmers and traders. As noted in previous chapters, Hickler (2007) explained that the term used for HPAI was different from the one that farmers

understood and were using. This may also be the case within this research project. When I consulted local animal health experts, they suggested that I use a certain term for HPAI. However, when I asked farmers and traders about the term, my interpreter said that they were using a different term for HPAI, which he translated as "general chicken disease". The Laotian farmers use the term *thay ha*, while the Cambodian interpreter failed to mention the actual term that the farmers used. Clearly there is scope for some linguistic confusion in these circumstances. So, in effect, Hickler's conclusions may be applicable in other parts of the region particularly in countries with more remote areas and large ethnic groups.

There had been extensive HPAI campaigns before and during the time of the field study, which could explain the consistent claims of awareness. As explained in the previous chapter, this field study was conducted between 2009 and 2010. Claims for awareness are nonetheless tenuous as the farmers' and traders' definition of HPAI differed from that of local animal health experts. Awareness of FMD is relatively higher because the disease is endemic in the surveyed areas.

7.3.2.4 Mascot Campaigns in TADs

One of the most prevalent and prominent tools used in the FMD and HPAI campaigns were mascots. Mascot campaigns in Cambodia and Lao PDR sought to increase awareness about TADs and were aimed at the general public. The Cambodian NAHO told me that Cambodian animal health authorities followed the Philippines' "Super Pig" campaign on FMD. However, "Super Pig" was first used in the campaign at a time when FMD was in the later stages of eradication. The Philippine "Super Pig" campaign's primary aim was to increase awareness about food safety. The rationale behind the campaign was that if the general public was enjoined to demand safe and clean food, then suppliers and producers would be pressured to practise stricter farm biosecurity and comply with other animal health requirements. The "Super Chickens" of the HPAI campaigns in Cambodia and Lao PDR were conceptualised when HPAI was just emerging. They were indeed popular but the effect was not long term and was not sustainable in the long run.

There has never been an evaluation of this activity and while my attempt is not extensive, it is the first. Bertrand (2004) described attractiveness to stakeholders (is it eye-catching?), comprehensibility (is it understandable?), acceptability and self-involvement (can the general public relate to the issue?) as parameters in evaluating the effectiveness of communication materials. For example, attractiveness assesses whether the mascot is attractive enough to the general public at first look, comprehensibility is whether the material is understandable, acceptability is whether the stakeholders are pleased with the material without finding anything offensive, and self-involvement is whether the stakeholders can relate to the material and consider it to be intended for them.

Cambodia and Lao PDR adopted the Philippines' FMD mascot strategy and launched their own mascots for their TAD campaigns. The Laotian NAHO said that they used a mascot in their campaign against FMD, called "Super Buffalo". The FMD mascot was used to promote market safety and increase general public awareness of FMD. Some Laotian farmers were able to recall "Super Buffalo" while the others were familiar with "Super Chicken" ("Super Kai"), a mascot used in the HPAI campaign with a similar purpose. Cambodia produced a "Super Chicken" ("Super Moen") mascot for their HPAI campaign similar to Lao PDR. The HPAI communication campaigns in both countries were spearheaded by UNICEF and supported by other UN-related agencies including NGOs contracted by western countries and other international organisations and NGOs. The mascot campaign, however, was funded specifically by the US and was implemented through FHI 360 (formerly the Academy for Educational Development). Most of the study participants felt that FMD was not a high priority because "it heals by itself" although farmers and traders said that they were only worried about it because it could spread easily.

The mascot campaigns were specifically designed to be an icon for the HPAI campaigns in both countries and to increase awareness of the disease. The mascot was first introduced in 2006 during the FHI 360-led workshops with government officials in both countries.

7.3.2.4.1 Attractiveness

The FHI 360 said that "Super Moen" (Figure 7.9) and "Super Kai" (Figure 7.10) were "created and promoted by key stakeholders" (AED, 2008). The key stakeholders described here were government officials. The "Super Chicken" mascots were very similar to each other but "Super Moen" had a distinct Khmer letter, which reads chicken, on its breast. Campaign stickers were also emblazoned with the slogan "Only you can prevent bird flu" and "Keep Cambodia free of bird flu" according to the Cambodian NAHO (see Figure 7.9).

Figure 7.9 Cambodia's "Super Moen"

"Super Kai", on the other hand, sports a plain blue jumper with a cape, and was half-human (see Figure 7.10). The mascots appeared in a number of media as an animated character in television or a comic character in print media. Both of the mascots represented strong muscular versions of roosters, with the live mascot being played by a tall actor able to dance and entertain.

Figure 7.10 Lao PDR's "Super Kai"

The mascots specifically appeared in brochures, posters, television PSAs, community festivals and were used in public service announcements. The mascots seemed to attract the attention of the farmers, particularly the Laotian farmers because they were able to recall "Super Kai". "Super Moen" was seldom mentioned in the FGDs in this field study.

7.3.2.4.2 Comprehensibility

In terms of this parameter, one of the main purposes of the mascots was to become the main attraction, especially in a community event. The physical appearance of "Super Kai" and "Super Moen" was designed to epitomise a strong chicken. The mascots might be good attention-grabbers, but for the general public who may not know anything about bird flu or HPAI, one look at a mascot would not be enough unless it was used with other media such as print media or a person explaining the event. Therefore, "Super Kai" or "Super Moen" would have to distribute some information materials or be accompanied by someone explaining the reason for his appearance. There were some study participants in this field study who did not mention "Super Kai" or "Super Moen" A probable explanation is that the mascot campaigns had not reached those particular villages.

7.3.2.4.3 Acceptability

The mascots worked well as an attention grabber in any public event, meaning they were readily accepted (COMMINIT, 2011). The Cambodian and Laotian NAHOs said that the general

public easily identified the mascots with a strong chicken, but never with HPAI right away. So, while "Super Kai" or "Super Moen" were accepted in the villages in both countries, it was not known whether awareness of risk-prevention against HPAI was filtering through to the public.

7.3.2.4.4 Self-involvement

Although "Super Moen" was seldom mentioned in the FGDs in this field study, it was particularly easily identified by the Cambodian public because of its design with a Khmer letter on its breast (AED, 2008). "Super Kai", on the other hand, seemed to be generic but the Laotian public accepted it anyway (COMMINIT, 2011).

7.3.2.5 Feedback

The farmers, traders and district or provincial animal health workers who participated in this field study were asked how the government sought or provided them with feedback on animal health issues. Feedback is an important evaluation tool for any project. It is a manager's indicator as to whether a program has been effective in fulfilling its goals (Rossi et al., 1999; Rossi et al., 2004). The key informants from Cambodia and Lao PDR interviewed for this study claimed that farmers were used to "catching up" with fellow villagers. These "catching up" sessions were also informal meetings and the key informants said that they usually took the opportunity to engage the farmers in animal health issues during these regular afternoon meetings.

The NAHOs claimed that feedback was achieved through personal visits by the VAHWs and reports submitted by the provincial animal health offices. They described the reports as outbreak and negative monitoring[20] reports. "I get feedback from the VAHWs and district animal health officers whenever I visit the field," the Laotian NAHO claimed. These comments were similar to those made by the Cambodian NAHO. He explained that when they went out in the field they tried to accomplish as much as possible, meaning they also conducted activities for other TADs such as CSF, HS and HPAI. These field activities included vaccination, treatment, advising and distribution of TAD information materials. There were no regular monitoring

[20] Reports of the absence of disease.

and/or evaluation of communication activities. Most of the feedback happened during village meetings, which, if not regularly held, occurred as the need arose or when there was an animal disease outbreak.

The OIE-RCU recognises that it is difficult to implement a monitoring and evaluation mechanism for animal health programs, especially FMD. However, it accepts that any information, including that from one of these "opportunistic" meetings could stand as a monitoring mechanism "to ascertain the level of awareness about FMD in key stakeholder groups" (OIE-RCU, 2007, p. 4). The opportunistic nature of monitoring and evaluation of communication activities was common across different animal health programs in Cambodia and Lao PDR and other GMS countries, in general. Most of the time there was no way to verify the findings of field officers.

7.3.3 Level of Animal Health Communication Resources

The World Bank classifies Cambodia and Lao PDR as low income with high agricultural share (World Bank, 2010a, 2010b). The resources for animal health communication are not explicitly stated in public documents; however, they have extremely low budgets for animal health. The Cambodian and Laotian NAHOs have described the funding source of communication activities as vague and drawn from funds allocated for training or materials by the department or ministry, which was also generally dependent on donor funded projects. The Cambodian NAHO explained that the "Department of Animal Health and Production, [has] extension services…[which] develop information materials". He went on to say that the staff of the extension services of their country did not act on their request for technical assistance on AHC activities because the extension services did not have any budget of its own to assist them. He said that external organisations had funded some of the communication activities that they implemented. The Cambodian national government funded some training of VAHWs in the country but there was no funding for public awareness or communication activities/materials. The NAHO said that they also needed technical assistance in the implementation of animal health communication activities because there were few agricultural extension staff in the

ministry. It was a similar situation in Lao PDR; however, the Laotian NAHO claimed that they did not have any assistance from the agricultural extension department. Lao PDR is in the same situation as Cambodia in that there is insufficient funding available for AHC activities. In most cases, most of the AHC activities in both countries were funded and technically supported by external organisations such as FAO, UNICEF and other related international and inter-governmental organisations.

7.3.3.1 Funding

Funding for communication activities has constantly been a problem particularly in animal health services. This was highlighted by the Laotian district animal health officer who said that, "the usual allocation of budget is for meetings during outbreaks, at checkpoints and for vaccination". I have discussed the economic standing of each country in Chapter 3. Based on this, external assistance was warranted, particularly funding of critical development initiatives. Many also observed that in recent years there has been enormous funding allocation to the campaign against HPAI in comparison with other diseases. Since the first outbreak of HPAI in Asia in 2004, agreed and pipeline funding for the HPAI campaign has reached US$139.9 million, allowing various organisations to respond at a global, regional and national level (FAO, 2006b). Despite falling short of the FAO-required funding estimates for HPAI activities, this amount is very large and it was raised in a short time for one animal disease. FAO placed the funding needed for HPAI activities alone at US$882 million (FAO, 2006b). One of the factors that contributed to the high cost of controlling and eradicating HPAI was the uncertainty about the characteristics and behaviour of the virus, which created some imbalance in the distribution of aid to other initiatives. However, the shortfall in funding for other diseases benefited from some 'flexibility' for most animal health authorities in the region. Most of the equipment was 'dedicated' to HPAI; however, some diseases required the same equipment. While there were strict guidelines that the equipment should be used for HPAI alone, according to personal communication with project coordinators in the region, the equipment was often used for purposes other than HPAI. In the implementation of some activities in the countryside, other priority diseases also 'piggy-backed' on major HPAI activities. Based on my experience, the

latter did not solely become a matter of HPAI identification and management training, but included other diseases such as FMD and CSF, thus arguably maximising the benefit derived from the resources and funding for HPAI. It benefited other disease initiatives that were equally important, but lacked funding. There were concerns of incomplete disease surveillance strategy in Cambodia and Lao PDR when a "negative for HPAI" result leaves farmers without a definite answer as to what really killed their poultry. This was not directly answered during the main field study and there were no implications in previous field studies of this research that testing for key differential diagnosis for HPAI were ever done.

Funding affects the kind of strategy that will be used in any animal health communication campaign. Limited funding means few information materials, as the Cambodian provincial animal health worker claimed. In Cambodia, the funding for HPAI meant that there was money for a mascot to assist in the promotion of public awareness on HPAI, theatre presentations in the villages, information materials, radio PSAs, posters and shirts. The Lao PDR district animal health worker also confirmed that Lao PDR implemented similar strategies and fielded a chicken mascot to boost their public awareness campaign.

SEACFMD member countries individually endorsed national FMD policy that supported communication activities; however, both the Cambodian and Laotian NAHOs claimed that funding constraints have always been an issue in their countries. Despite the challenges, member countries continued efforts to implement animal health communication activities. It was clear that external technical and funding assistance were factors in the success of communication activities in Cambodia and Lao PDR. The funding of member countries in their FMD programs varies because of a number of factors, including economic and technical capability. An example is how investment in FMD communication was provided for the Philippine FMD Campaign. The Philippine FMD Campaign has been a model for SEACFMD member countries, including Cambodia and Lao PDR. Investment in FMD communication in the Philippines was about US$20,000 during its pre-eradication phase. This increased to about US$100,000 during the eradication phase (Canda-Benigno et al., 2002). Communication activities were, however,

deemed irrelevant after eradication was achieved and funding for communication activities has slowly decreased. The increase in investments in FMD communication activities in the Philippines was made possible by foreign funding and this is the case in most GMS countries. Most of the funds were usually allocated to multi-media materials such as billboards, leaflets, radio PSAs and training of VAHWs.

7.3.4 Current Issues in Communicating Animal Health Issues in Cambodia and Lao PDR

The FMD campaigns were based on an agricultural extension framework while the design of the HPAI campaigns was based on a combination of mass media and alternative media approaches. While both of the campaigns seemed to use different approaches, they were in fact the same in terms of design. NAHOs claimed that professional communication specialists designed both campaigns with little or no consultation with grassroots stakeholders. There were a number of international and local organisations that assisted in the design of HPAI campaigns in Cambodia and Lao PDR but the most prominent ones were designed by UNICEF (Wilsmore et al., 2010). Table 7.6 shows the main differences and similarities between the two campaigns. The differences between the two campaigns become obvious when comparing the resources available. Communication campaigns on HPAI had greater funding compared to those for FMD, and they might be the only TAD communication campaigns that have had explicit funding. There is almost no funding for the communication campaigns of other TADs, which is probably the reason that some funding for public awareness activities came from funding allotted for training or blood collection activities. Both campaigns, however, followed a top-down approach despite acknowledgement among development managers of the importance of participatory approaches. Personal risk perceptions among the study participants were different for both campaigns, which may explain why the motivation to follow messages was varied between the two campaigns. In the previous chapter, risk perception among study participants was also found to be related to their motivation to follow animal health messages, which was directly proportional to their perception of their own or their animals' risk of contracting a specific animal disease and to the value of animals involved.

Table 7.6 Summary of differences between the communication campaigns in Cambodia and Lao PDR.

Themes	FMD Communication	HPAI Communication
Nature of disease	Epizootic	Zoonotic
Nature of Objectives	Awareness/Behaviour change	Behaviour change
Framework Used	Agricultural extension	Mass and alternative media
Strategy	Top-down	Top-down
Resources Available	Low	High
Motivation to follow message among stakeholders	Low	High
Personal risk perception	Low	High

There was an average of 21% of both Cambodian and Laotian participants in the KAP survey who were aware of, but not knowledgeable about, TADs and their disease signs or specific government programs about these TADs. A farmer or trader may have been aware of TADs, but without knowledge-specific signs of disease, there is the possibility that diseases could spread without the farmer or trader knowing it, particularly if they do not know about, and therefore do not participate in current government campaigns about that TAD.

7.3.5 Improving Animal Health Communication Strategies

Funding remains a big challenge for both Cambodia and Lao PDR. This may be the reason that communication activities continue to be relegated to training activities, which I consider in this study as one-way activity with no real stakeholder engagement. Nonetheless, the existence of training has formed the basis for claims that stakeholder engagement is somehow taking place. Most of the government funding allocation focused on training and education. The idea of communicating with stakeholders was marked by a top-down approach from the national implementers to the grassroots. The national and district animal health officers considered reports as feedback from the grassroots stakeholders. There was no real engagement at the grassroots as to how people felt about the strategies or whether they understood them. Evaluation of communication activities is a specialised activity conducted by external organisations such as FAO, UNICEF, WHO and non-governmental organisations (NGOs) (Hickler, 2007; Holmes, 2008; N. Hungerford, personal communication, June 5, 2008). Based on the FGDs and interviews of the study participants, both the HPAI and FMD communication

campaigns were relatively ineffective. Despite reports of high awareness, there was little evidence of behavioural changes among the study participants. These conclusions have been drawn in other studies too (see R. G. Alders and Bagnol, 2007; Caro, 2006; Hickler, 2007). External support is variable and sometimes seems to be sufficient, but if this disappears, extensive and effective communication campaigns may not be available to Cambodia or Lao PDR. The only way these countries could be self-sustainable in terms of animal health communication activities is through sustainable resourcing, and training the VAHWs to properly engage with grassroots farmers. It appears that farmers consulted the VAHWs the most frequently because of their accessibility and relative ease in communicating. In effect the VAHWs are the most trusted agents of change. Traders and other commercial farmers relied on the advice and services from district and national animal health officers.

7.3.5.1 Need for Communication Plans with clearly articulated operational strategies.

The absence of operational documentation of communication plans submitted to the SEACFMD Program presented a great challenge in implementing any plan. I asked the government animal health officers for any operational plans they have developed but they were unable to present any; neither was there any monitoring or evaluation mechanism in place. In my experience, internationally supported communication plans would indeed have been presented to the government animal health officers and been agreed upon in principle. However, in reality, the communication plans were never operationalised or implemented. The closest that most of the member countries came to complying with the "agreement" was through the coordination of key activities funded by international organisations. The capacity of the country, most of the time, dictates the success or failure of any communication plan. Whether communication plans are deemed to have been successful or not is dependent on the next internationally sponsored evaluation study.

7.4 GENERAL COMMENTS ON EVALUATION

How effective are programs for communication on FMD and HPAI? While they may be perceived as satisfactory among study participants, there is evidence that they did not achieve their aim of changing behaviour among study participants. It is also evident that the overall strategy followed the tenets of top-down approaches. Most of the communication strategies were designed at the national level and "transmitted" to the grassroots stakeholders. I have noted that while there were extensive materials and communication activities on HPAI, most of the participants in this field study still felt that they needed more information and material on the disease. The zoonotic nature of the disease and the bombardment of information on HPAI may inadvertently be causing undue fear to stakeholders, who have reacted by demanding more and more information.

Internationally commissioned communications specialists assisted government officials in designing the mascots, and pre-tested the mascots on other government officials without the participation of any farmers, traders or VAHWs. It is evident that while there were efforts to adopt participatory approaches, such approaches were not acted on. There seemed to be some ineffectiveness in communicating issues on TADs because there is no real knowledge among the study participants, as presented in this chapter. HPAI communication campaigns were more likely to succeed because of HPAIs' zoonotic nature. The study participants expressed the view that they would prioritise HPAI messages over FMD messages. I have also discussed misconceptions regarding exactly what constitutes communication activities. I will reflect on the findings of this research and draw some conclusions in the next chapter.

CHAPTER EIGHT
ANIMAL HEALTH COMMUNICATION: DISCUSSIONS AND CONCLUSIONS

In this chapter, I summarise and reflect on the findings of my research. Exploring the complexity of communication practices has required harnessing various approaches to its investigation and evaluation. My research has contributed to the debate of the importance of participatory approaches to communicating animal health issues and is the first formal attempt to address communication in animal health. I believe it is significant because of its practical contributions to determining how communications relating to TADs should be practised and understood. The sections below thus raise questions based on the findings of my research and propose recommendations for further research.

8.1 INTRODUCTION

This research project was conceptualised to investigate and evaluate communication campaigns about TADs in selected countries in the GMS. It is the most recent qualitative investigation into animal health communication after Hickler's (2007) study but the first formal academic inquiry. There were other studies on communicating TADs conducted in the region but these were quantitative (see CARE International Vietnam and Quality of Life Promotion Centre, 2005; Caro, 2006). While quantitative studies give an overall awareness of the communication gaps in the region, qualitative studies contribute to the understanding of why these gaps exist. A quantitative study might yield information about how much of the population are aware of TADs but sometimes it is not enough to explain why there is continued risky behaviour. This is where qualitative studies can provide valuable insight into factors underpinning statistics. By conducting FGDs among affected members of that population, such as grassroots stakeholders, a researcher can further investigate results of any quantitative study. These results can be further

verified by interviewing other stakeholders such as the NAHOs, DAHOs, PAHOs or VAHWs to test the validity of findings from the FGDs with grassroots stakeholders.

This project details the findings and evaluation of a survey and two field studies, conducted to evaluate perceptions of participants and to investigate and evaluate animal health communication in the GMS. It is envisaged that outcomes from this thesis will inform the implementation and planning of AHC campaigns in the future. The outcomes of this research can be summarised into two key points—investigation of communication at the village level and evaluation of two major communication activities in the selected GMS countries. I summarise important findings and address the extent to which key objectives of this research have been achieved. I will then describe and discuss how to improve animal health communication in the GMS before discussing broad project conclusions.

8.2 ANIMAL HEALTH COMMUNICATION

There were difficulties in evaluating the FMD and HPAI communication campaigns because of the dearth of literature available and the challenges faced in the collection of data within this research project. The FGDs and interviews, however, yielded interesting common responses. My research project's series of field studies, review of literature, reports, other unpublished documents and personal knowledge in the field contributed to an understanding of what grassroots stakeholders in selected GMS countries describe as AHC. I was able to collect satisfactory background data about the characteristics of participants of this research through a KAP survey. I tested the applicability of participatory tools such as transect walks, FGDs and interviews for use in the survey areas and focused the guide questions to investigate and evaluate communication on TADs in selected countries in the GMS.

I showed in the previous chapters that communication plays an important role in animal health by showing that farmers and traders wanted more information on some TAD issues despite the extensive and intensive communication campaigns, particularly about HPAI. The request of farmers and traders for more information also proved that there are some problem areas in

communicating with stakeholders, as discussed in Chapter 5. As a key component of animal health programs, an effective communication strategy could improve planning and implementing solutions to better control diseases and promote animal health.

I acknowledge that there are efforts to engage various stakeholders in animal health services. A number of fields have influenced how communication in animal health has been implemented, including agricultural extension, social marketing and development communication. However, claims of success in communicating animal health issues and the application of development communication principles in AHC campaigns are rather tenuous. I was able to show in this research that so-called "communication" campaigns in animal health programs are mainly one-way and lack any meaningful engagement with stakeholders.

I was able to show that there were still some efforts to engage stakeholders with a number of communication activities about TADs. However, the existing animal health framework, adopted by governments and some development, international and non-government organisations such as the UN and NGOs, do not allow the meaningful engagement of stakeholders because of its intrinsic top-down approach. Documents I reviewed in this study including FGD notes and interview records show that strategies were designed without consultation with grassroots stakeholders. Animal health authorities had instead relied mostly on their commonsense and their knowledge of the characteristics of stakeholders to communicate animal health concerns.

8.2.1 Communicating TADs issues at the Village Level in Cambodia and Lao PDR

I investigated how participants of this research understand communication and how communication occurs at the village level. Most participants describe AHC as a combination of public awareness and animal health strategies based on the transcripts and expanded field and interview notes in this research. Animal health authorities need to appreciate farmers' knowledge concerning animal diseases and capitalise on grassroots stakeholders' understandings of what animal health communication is in order to more effectively frame and communicate animal health messages. I found from the FGDs and interviews in this research that animal

health authorities try to include communication activities, such as distribution of information materials, education and listening to issues raised by stakeholders, in the implementation of technical activities, such as vaccination, animal movement management and serological surveillance. This is a reality in the field because of the lack of funding for animal health services. However, the number of objectives squeezed into one activity implies that there are no specific strategies for communication about TADs. This may explain why there were some farmers who lacked knowledge about TADs as highlighted by the results of the KAP survey and FGDs in the exploratory and main field studies.

I identified a number of factors affecting AHC, as explored in Chapter 5. These included motivation to follow animal health messages, differences and similarities among countries, trusted communication channels, feedback, and communication strategy. Study participants were motivated to change depending on the nature of the animal disease and cost involved. They tended to comply with the suggestions of any animal health message if it related to a zoonotic disease or if it concerned a high-valued animal. I found that study participants trusted television, radio and VAHWs the most compared to other communication media and agents

I was able to confirm some of the findings of previous studies on AHC (CARE, n.d.; CARE International Vietnam and Quality of Life Promotion Centre, 2005; Hickler, 2007; Otte et al., 2004), for example, that there is some awareness of some TADs. However, I was able to demonstrate that this research project's participants generally had low levels of knowledge[21] or had not applied any learning derived from current communication campaigns; in other words, they did not modify their behaviour in response to this information. However, there were occasions where the farmers seemed to be more knowledgeable than animal health authorities, such as in recognising the clinical signs of HPAI and ND as falling within the same syndrome. I showed this in Chapter 4 and in more detail in Chapter 7 when I further analysed the answers of the Cambodian and Laotian participants regarding clinical signs. Some farmers and VAHWs were not aware of some government TAD programs. This may indicate that the government

[21] Knowledge defined as the application of information learned

programs, particularly AHC campaigns, were not reaching the study participants. However, when I analysed the communication network where study participants learn about animal health issues, they reveal that they primarily obtain information from VAHWs, TV and radio. In summary, the government AHC campaign could be credited with reaching only a small number of participants in this study, and such contact had generally not resulted in behavioural change.

The farmers and traders who participated in this research acknowledged that they did not comply with some of the messages from animal health authorities. I identify a number of factors that contributed to the inability of study participants to engage with or respond to messages on animal health, which included the environment, practicality of the recommendations, and other beliefs. Another factor that might have contributed to the challenges of communicating TAD issues was the claim by NAHOs in this study that agricultural extension activities were communication activities. As detailed in earlier chapters, animal health authorities (NAHOs, PAHOs, DAHOs and VAHWs) believe and practise agricultural extension as a way to educate, to train and to transfer technology to farmers. Most often, however, there was no communication or exchange of ideas between animal health officers/workers and the stakeholders or acknowledgement of indigenous knowledge among stakeholders. This apparent lack of mutual understanding between animal health experts and stakeholders has highlighted the importance of, and need for, communication in animal health, together with the relevance of this research. Had the animal health authorities understood at the outset the grassroots stakeholders' attitude and perceptions, they may well have been able to solve their most significant problems early on. Animal health authorities also missed some opportunities to communicate animal health messages to stakeholders more effectively, such as capitalising on the role and status of VAHWs. For example, strategies such as helping fellow farmers to recruit other VAHWs, conducting regular afternoon meetings as a venue for continuing education, using community radio towers and identifying strategic locations in villages for communication materials could all improve communication.

This project has shown the important role of VAHWs in communicating TAD issues through the unanimous opinion across participants of this research. The VAHWs live in the communities, making some of them more approachable than local animal health representatives such as PAHOs and DAHOs. Some of the VAHWs interviewed in this research, however, are not confident enough to exercise their duties because of irregular training or lack of it. As expected, the traders are more concerned about their livelihood or businesses. They claim that they do not have time to give attention to TAD campaigns. The attitude of traders to the importance of information on TADs is concerning, particularly for animal health managers because trading acts as a catalyst for the spread of TADs in the region. VAHWs and disease outbreak investigators identify traders as one of the sources of TADs in outbreak investigation reports. It is, therefore, important that they cooperate with any TAD communication campaign and modify their behaviour to break one of the factors in the cycle of TAD spread in the GMS.

Communication between animal health officers/workers and farmers/traders is essential to ensure that the latter understand the reasons behind the implementation of disease control strategies and the aims of a campaign. It is also important for animal health officers/workers to identify and acknowledge stakeholders' indigenous knowledge, as it could assist in the development of technical strategies to control TADs. For example, separating new and old animals (quarantine) to avoid the introduction of TADs already appears to be a common practice, although not with the aim of controlling TADs but rather to socialise new animals. There is an opinion among farmers and traders that the experts' roles are to educate and guide the stakeholders, especially farmers, towards a more productive harvest. There is no problem with these perceived roles; however, most often the grassroots stakeholders were not ready to be educated or trained because they deemed some of the advice or training either inadequate or irrelevant. They were also not keen to participate in the planning through to evaluation stages because they believe that animal health strategies are best taken care of by the experts. Some animal health authorities from NAHOs to VAHWs also believe that when they "educate" farmers and traders, NAHOs, PAHOs, DAHOs or VAHWs are there to tell farmers and traders what to do and not exchange ideas or hear from them whether the recommendations will work.

The nature of animal diseases affected compliance among the study participants. They expressed preference for messages that would directly affect their personal well-being. This means that communication campaigns on zoonotic diseases are likely to have greater success compared to communication campaigns on epizootic diseases. Environmental factors and the practicality of the recommendations also contribute to the "ease" of enacting the campaign message. The value and number of animals involved also affected whether farmers and traders would likely report any TAD incidence. Reporting animal disease outbreaks is one of the most important aspects of disease control and is an objective of AHC campaigns, but most of the farmers and traders participating in this study will not report an outbreak or death among small animals, particularly poultry, unless the value is more than a month of their average wages. The endemic nature of most diseases in the selected GMS countries means that reporting TAD incidences regardless of size and value is an important exercise to control its spread. This also indicates the ineffectiveness of existing AHC campaigns at the village level, which aim to encourage reporting of TADs.

8.2.2 Evaluation of FMD and HPAI Communication in Cambodia and Lao PDR

Evaluation may not necessarily measure resultant behavioural change, but may also "assess the assumptions and quality of communication activities" (Owl Research and Evaluation, 2008). In this research, while I was able to show some ineffectiveness in the AHC campaigns, one of my primary aims was to assess the assumptions of the participants about the campaigns and, ultimately, the quality of the activities implemented. I first evaluated the frameworks implemented in Cambodia and Lao PDR and showed that the agricultural extension frameworks in place in Cambodia and Lao PDR are relatively weak compared to other countries such as Thailand and Vietnam because of a lack of technical expertise and funds. Vietnam had a stronger network of commune animal health workers in place that is supported by its government compared to Cambodia and Lao PDR. In principle, there is strong support of VAHWs in Cambodia and Lao PDR. However, because it is a voluntary initiative, training and material supports are not obligatory. Animal health authorities associate communication

activities with agricultural extension. Their understanding of agricultural extension is that it involves a top-down approach intended to educate farmers, traders and the general public, i.e., mainly one-way communication. Participating farmers and traders in this study generally believe that animal health services "are given" and, therefore, are better left with the expert without the need for their participation. These cases mean that participatory approaches will be hard to implement, which may lead to another ineffective implementation, not only of animal health services, but AHC activities. I have shown in this research that the increasing popularity and proven effectiveness of participatory approaches recently triggered a re-think of the agricultural extension paradigm (Zhou, n.d.). There have been efforts to adapt a participatory approach in agricultural extension (Ameur, 1994 ; Farrington, 1995; World Bank, 1995; Zhou, n.d.), which means that consultations with stakeholders in the implementation of agricultural extension programs are being considered, from planning to implementation. A participatory approach to animal health programs could work because grassroots stakeholders are more likely to understand the purpose of AHC and its benefits to them. It also ensures that there is meaningful engagement between animal health authorities and farmers and traders. I showed in this research that there is reluctance among farmers and traders to participate in the planning, implementation, monitoring and evaluating of animal health programs, this is possibly because they strongly identify communication with agricultural extension activities where they expect only to "receive" training and are not expected to participate in further activities or engage with animal health authorities. So, it is important to emphasise among them that their participation will guarantee any animal health program's success, because previously they have not participated as expected. Some of them wanted to participate but only in the implementation phase or when receiving free services. There were also some of the farmers and traders who wanted to appoint a representative to any government program if given a chance to participate in activities associated with stages other than those of implementation.

I found that there is no strategy in place in the selected GMS countries for the evaluation of animal health programs, particularly communication campaigns. Based on the transcripts of the FGDs and interviews, evaluation of some communication activities were based on results of

animal health activities such as the rate of return of disease outbreak reports. My review of the available literature also shows that the modernisation paradigm is prevalent in almost every development program, linked to the dominant nature of the one-way communication approach. There is overwhelming evidence that a one-way communication approach is ineffective and that the implementation of participatory approaches is an appropriate remedial action (Mefalopulos, 2003, 2008; Servaes, 2008; Waisbord, 2001). Based on the results of this research, I concur with other researchers that participatory approaches are better alternatives to the modernisation paradigm because of some documented successes in other development initiatives such as public health and economic development (Anyaegbunam et al., 2004; Inagaki, 2007; LeFevre et al., 2000; Mefalopulos, 2003, 2008; Quebral, 2006; Servaes, 2008; Sosale, 2008; Waisbord, 2001). I referred to specific examples in Chapter 2.

I was able to show in the evaluation of the communication campaigns in Cambodia and Lao PDR that there were inefficiencies in the campaigns. Some of the inefficiencies included the implementation of one-way approaches where there was no direct consultation with grassroots stakeholders. There is a feeling of satisfaction among study participants about the implementation of communication activities but some strategies were not effective in terms of modifying their behaviour. For example, the mascot campaign was conceived at a critical time when HPAI was an emerging TAD and the strategy was not sustainable in the long term. This assertion is based on the responses of study participants and evidence of the continued risky behaviour among them despite extensive public awareness campaigns. There is also no standard evaluation mechanism such as forms, interviews or studies in place for the communication activities. Externally funded studies have served as a basis for the evaluation of communication activities in most of the countries in the GMS (See R. G. Alders and Bagnol, 2007; Caro, 2006, 2008; Hickler, 2007). However, as there were only a few studies, there is limited evidence of long-term or ongoing evaluation.

Another factor that contributes to inefficiencies in communicating animal health issues is the animal health framework that animal health authorities follow. The traditional components of

animal health frameworks in the selected GMS countries are disease surveillance, disease diagnosis and animal movement management. I found that the national governments involved in this field study used top-down approaches in communicating animal health issues. The only feedback that the government normally receives are reports from the provincial animal health office regarding animal disease outbreaks. This leads to the question of whether a development communication framework could be adopted in planning and managing communication programs. As discussed in Chapter 2, a development communication framework is participatory in nature, meaning stakeholders are actively involved from the planning through to monitoring and evaluation. While there were efforts to highlight communication, the current framework does not fully support engagement of the stakeholders but rather leans towards a one-way approach of giving information or training and educating stakeholders, without any systematic feedback and evaluation mechanisms.

In international development, there is a movement towards participatory approaches or empowering stakeholders (R. G. Alders and Bagnol, 2007; Bessette, 2004b; FAO, 1989; Kwame Boafo, 1985; Mefalopulos, 2003, 2008; Morris, 2003; Servaes, 2008; Sosale, 2008; The Communication Initiative et al., 2007), which requires the involvement of various stakeholders in all stages of the proposed project—from planning and implementation to evaluation. However, involvement of stakeholders in all stages of an animal health program might not be practicable because there are components that are better left to technical experts, for example, disease diagnosis. For obvious reasons, it is not practicable to involve a large number of stakeholders in deliberating on how a diagnostic laboratory should be managed. However, the communication of results from the diagnostic laboratory requires translation and explanation into layperson's terms. This can become a source of contention between animal health experts and traders and farmers because, often, animal health experts, particularly laboratory technicians, use technical jargon in their reports without further explanation, which can lead to the misinterpretation of results. The use of a participatory approach in communicating laboratory results is important to ensure that grassroots stakeholders understand the results.

The increasing acknowledgement of the importance of engaging with the beliefs, attitudes and practices of farmers, traders and other stakeholders, more generally referred to as "beneficiaries" of development projects, has also seen a rise in the implementation of participatory approaches (Mefalopulos, 2003). Participatory approaches to development have given hope that the empowerment of stakeholders can be achieved. I acknowledge that there is no ultimate strategy to ensure the empowerment of stakeholders. However, with the implementation of participatory approaches, which are strongly characterised by communication activities with stakeholders and underpinned by social science research, stakeholders could be assured that development project managers are slowly recognising the value of indigenous knowledge and attitudes. It is the same in the animal health sector. The increased recognition of the importance of communication between project managers and stakeholders has meant that initiatives such as TAD control programs are more acceptable because of the opportunity to develop mutual understanding between the two parties.

I advocate participatory approaches. However, I acknowledge that there are limitations with participatory approaches in development. Ascroft and Masilela (1994) caution anybody advocating participatory approaches to development as there are always challenges in realising the concepts behind the theory. As a practitioner, I am well aware of these inherent challenges, which can include financial costs, personnel and time constraints. Funding continually hinders the implementation of purely development communication or participatory communication approaches and there is also the challenge of trying to involve a representative number of stakeholders from the planning to the evaluation stages of a developmental project. It seems that any implementation of a participatory approach to development remains challenging. Stakeholders demand transparency and implementers demand cooperation. The only way that both sides can arrive at a mutual understanding is through genuine communication. The strong affinity of development strategies with a top-down approach or the modernisation paradigm of governments and even development institutions, make the implementation of a participatory approach to development a daunting task. The practical way that both managers and stakeholders can arrive at a mutual understanding is through trust and sustained engagement. If

there is openness or trust between the managers and stakeholders then mutual understanding might be achieved.

In the early chapters of this thesis, I adapted the definition of public health communication and defined animal health communication as "the study and use of communication strategies to inform and influence individual and community decisions to enhance animal health and prevent, control and eradicate animal diseases.[22]" While the aim of AHC was to "inform and influence", I have suggested that AHC should mainly be participatory in nature, taking into account the realities and knowledge of grassroots stakeholders. Within this research project, however, the majority of study participants have strongly identified animal health communication with strategies or tools involving a one-way process. The question is whether this kind of AHC translates to better animal health outcomes for livestock and better economic returns for the stakeholders[23]. The inefficiencies that I identified in this research in engaging grassroots stakeholders to adopt strategies against TADs might imply there is a problem in efforts of Cambodian and Laotian animal health experts to communicate about TADs effectively. Based on the perception of participants of this research, animal health communication, therefore, is the effort of animal health experts to educate and to provide animal health services to stakeholders. There may be some reluctance on the part of the stakeholders to actively participate in all sections covered (planning, monitoring and evaluation) in the operation of animal health programs. Such factors may include the patriarchal nature of communities in the selected GMS countries, animal health frameworks adapted by governments, the use of rewards, and ease of participation. I suggest, based on the findings in this project, that there is a need to improve the communication skills of veterinarians and eventually VAHWs. Other research suggests that a good relationship between an animal health specialist and a client may increase adherence to good animal health practices (Bonvicini and Keller, 2006). Regular training should be in place to fill the service gap, which should improve the VAHWs basic skills and eliminate the need for government animal health experts to visit the villages unless there is a wide-scale

[22] Extended definition adapted from the public health communication of US Department of Health and Human Services (National Cancer Institute, 2003)
[23] General animal industry stakeholders not only the study participants.

TAD emergency. Regular training of VAHWs could also improve animal health services. The seemingly persistent low knowledge among the grassroots stakeholders including VAHWs and the apparent guesswork used by NAHOs, PAHOs and DAHOs to engage with grassroots stakeholders make me conclude that a participatory approach is the best way to address problems identified in this research. The literature supports my position, not least because other scholars agree that participatory approaches, in the long run, will be sustainable and will enable grassroots stakeholders to understand the problem and be part of the solution (Anyaegbunam et al., 2004; Bessette, 2004b; FAO, 1989; Inagaki, 2007; LeFevre et al., 2000; Manyozo, 2006; Mefalopulos, 2008; Quebral, 2006; Servaes, 2008; Sosale, 2008; Waisbord, 2001). In other words, grassroots stakeholders' participation will itself ensure a better understanding of that problem, and nurture awareness that they themselves can contribute part of the solution.

8.3 REFLECTIONS ON THE FINDINGS

Despite the claims that there are communication initiatives within the animal health sector in ministries in the selected GMS countries of this study, if one defines communication as a meaningful engagement towards mutual understanding, then strictly there is no communication ongoing in the field. I would like to reflect on the learning engendered by this research and discuss its theoretical underpinnings. The following lessons have been learned in this study:

- Overall, the potential and limitations of communication can play a role in the control and prevention of animal diseases and promotion of animal health. It cannot substitute for a well-supported animal health program.

- Study participants understand communication in different ways: there is a need for animal health authorities to align their understanding of what constitutes communication with the perceptions of farmers and traders. For them, communication in animal health is the engagement of stakeholders through various animal health activities such as vaccination, serological surveillance and animal movement. Animal health authorities, on the other hand, perceive these

activities as one-way communication to grassroots stakeholders because they believe they, the authorities, hold knowledge about animal health. This is a clear indication that some of them do not acknowledge or value possible indigenous knowledge among grassroots stakeholders.

- A purely participatory approach, as I described in Chapter 2, to implementing animal health programs may not be feasible, but animal health authorities should nonetheless include grassroots stakeholders from planning through to evaluation stages of any animal health program components that will directly involve them, such as epidemiology, animal movement management and disease diagnostic results. This is already being done in some projects in Southeast Asia where participatory epidemiology is being implemented and resulted in improved cost-efficiency in the long run.

- Animal health messages need to be contextualised with current practices of grassroots stakeholders. Practices such as separating animals should be emphasised according to the relevant context of their practice and with an explanation of the importance of such practice in animal health.

- There is a need to rethink the animal health framework followed in the selected GMS countries in this study. While there are in principle commitments to highlighting communication activities, this is simply not feasible with the current framework.

- VAHWs will feel more confident if given regular training on disease diagnosis and management. This may not be easy given the current economic and personnel level of the countries in this study, but regular visits by DAHOs to brief VAHWs may make a difference.

The above lessons show that there is a need for better implementation of animal health programs from the national down to the village level. Despite the inadequate resources and personnel in the GMS countries, I believe that the adoption of a participatory approach can still take place if all stakeholders agree on the path towards a better animal health program. The first step is acknowledgement that participatory approaches are the key to better animal health programs. If such acknowledgement among stakeholders happens, then a uniform path forward towards improved animal health is possible. It was not the aim of this research project to inform grassroots stakeholders of the importance of participatory approaches, and I suspect that they may change their opinion regarding participation in government programs once they learn of its significance.

Based on these lessons and the findings of this research, we are still left with some questions on animal health and communication about TADs. Is a participatory approach a better way in the implementation of the VAHW system, or will a paid animal health worker make a difference in delivering services and communicating about TADs? Will the combined approaches to communicating about TADs work? How can we communicate the importance of participatory approaches to grassroots stakeholders?

8.4 IMPROVING ANIMAL HEALTH COMMUNICATION

A well-negotiated animal health communication plan can be a decisive tool in the control and prevention of animal health. However, policies should be in place to support any outcome from communication activities. There are pre-requisites to better engagement and prerequisites to sustaining the gains of an improved engagement of stakeholders. I have showed in earlier chapters how better engagement can be achieved and possible solutions to sustaining the achievements of communicating animal health issues with stakeholders.

Since animal health communication has evolved from participatory-inspired fields such as development communication, a combination of different participatory communication strategies may be the way to improve communicating animal health issues. For example, as I suggested in

Chapter 2, participatory approaches are characterised by grassroots stakeholders' involvement in every stage from planning to evaluation. Thus, the participatory approaches could increase the effectiveness of animal health programs. In particular, the intensive problem analysis process, in which grassroots stakeholders are actively involved in finding a solution, may better address the issue of risk taking behaviours among grassroots stakeholders. The participatory epidemiology work in Indonesia might well be one of the best examples towards this trend (FAO, 2008; Hungerford, 2008; Pepall et al., 2007)

It has been argued that there are a number of factors affecting the communication of TAD issues. These factors include the level of motivation of farmers to follow animal health messages, the use of trusted communication agents, and risk perception. I advocate improved communication measures overall, not simply more training *per se*. However to enable a better engagement of farmers and traders, there is a need for VAHWs to access regular training to build their confidence. I acknowledge that Cambodia and Lao PDR are not in a position to train all of their active VAHWs and other field technicians on a regular basis, but this is an imperative for the future because of the trust placed in them by grassroots stakeholders. Providing better training on animal health to VAHWs and field technicians will not only increase their confidence in handling animal health issues, but will empower them to better engage farmers and traders to address TAD issues. Grassroots stakeholders should also be involved in the planning, implementation and evaluation of animal health communication activities. This would ensure ownership of any activities and may ensure the success of future communication activities.

8.4.1 Recommendations to Improve Communication about TADs

Despite claims of communication in animal health being practised, previous efforts to "communicate" involved one-way communication. The notion that "animal health is better left with the experts" is so pervasive among study participants that a top-down approach might be difficult to change. However, this study found that cooperation of grassroots stakeholders is paramount in controlling TADs. The strong identification among VAHWs and NAHOs that

communication is just training and information dissemination relegates communication to a one-way activity. The evaluation of communication at the grassroots level demonstrates the important role of VAHWs and the need for ongoing training in animal health services. The effectiveness of animal health campaigns, particularly communication campaigns, cannot be determined without systematic evaluation. I hope that, as a result of this research, animal health communication will operationally be highlighted as a key component of future animal health programs in the same way that public health communication is considered vital to public health programs (Kreps et al., 1998).

Overall, I have demonstrated that despite efforts to apply participatory approaches to animal health programs, in reality campaigns adopt a top-down approach. I believe that a shift towards a more participatory approach in the implementation of animal health programs is needed to initiate a more communication-centred approach towards grassroots stakeholders. Unless this change is realised from policy to execution, an effective animal health program will never be achieved. In addition, I recommend the following:

- Animal health framework should be designed to accommodate participatory approaches. There is a need for better involvement of grassroots stakeholders from planning to evaluation. This is feasible in the current situation in Cambodia and Lao PDR where there is a large contingent of NGOs operating. The government can tap these resources in terms of funding and/or personnel. The feasibility of multi-organisation working in one country was previously tested during the HPAI outbreaks when multi-sectoral, multi-national and inter-agencies worked together to control the disease. Specifically, it will be useful to use participatory epidemiology to understand more of farmer's knowledge and integrate them in disease control strategies.

- In communicating TADs issues in a sustainable way, policies must be in place supporting a participatory approach to animal health. This may mean additional

funds and personnel. In least developed countries such as Cambodia and Lao PDR additional funds and personnel may not be a possibility but government authorities and policy makers can start by piloting an area where they can implement participatory approaches to animal health. The people who will be versed in this approach will then train other people in nearby villages and so on. This approach is somewhat patterned to how some social marketing strategies are implemented but may take sometime before it fully realise a sustainable phase. In countries where there is lack of funding and personnel, this may well be a better option assuming that there is no external funding or assistance.

- Veterinary students would benefit from communication management-oriented courses and not only skills-oriented training. The veterinary communication course should be revised to include a focus on both the development of communication skills and of communication campaigns.

- Animal health strategies should work within the stakeholders' cultural context in order to maximise operational efficiency. For example, initiatives relating to the separation of animals should be designed in accordance with current cultural practices. It is also important to consider economic and ecological contexts.

- There is a need to fund the implementation of a combination of PRCA and PCSD or CPPE and its evaluation. Although these approaches have been found to be individually effective, a combination of these approaches has never been tried. Such a combination may result in better implementation of animal health services and communication campaigns.

- There is a need to further investigate and evaluate how animal health communication is practised in other parts of the GMS.

8.5 CONCLUSIONS

I return to the aims and objectives of this research that I set early in this thesis and make my final remarks. The main aims of this research were to investigate and evaluate communication about TADs in selected countries in the GMS. I tested tools appropriate for use in this research, I investigated the practice of AHC and found a number of factors affecting communication on TADs, I evaluated the effectiveness of FMD and HPAI communication campaigns in Cambodia and Lao PDR and I evaluated results from a series of field studies to understand the practice of communication about TADs at the village level in Cambodia and Lao PDR. As a result, I reiterate the call of Mefalopulos (2003) that there is a need to change the paradigm for development, specifically there is a need for animal health programs to be more participatory. As the research findings demonstrate, the current paradigm in animal health programs in the selected GMS countries is predicated upon a top-down approach. Various studies have confirmed the ineffectiveness of top-down approaches to communication (Bessette, 2004b; Colle, 2008; Manyozo, 2006; Waisbord, 2001; Wilkins and Moody, 2001). My suggestion is to integrate some of these strategies in order to achieve better results. Specifically, the integration of some strategies in PRCA and PCSD or CPPE, discussed in Chapter 2, may work because using these strategies means that campaigns do not pre-empt possible solutions but involve stakeholders in understanding the problems and solving them. The integration of strategies addresses a persistent problem in development projects—the lack of engagement of stakeholders and their involvement in problem solving. I believe that combining these strategies may contribute to specific identification of AHC problems and their solutions. The PRCA, PCSD and CPPE have never been implemented in any GMS countries and a new approach to development, through a combination of these strategies, may prove prescient. This is my contribution to the body of knowledge of DevCom or communication for development.

Each stage in the new approach that I am advocating, however, should be with the guidance of a multi-disciplinary team composed of animal health specialists, anthropologists and development communication specialists along with other specialists that may be identified as important by the representative stakeholders to a particular campaign, such as GIS specialists. Participants in this study indicated that they would be willing to participate in animal health programs only if guided by specialists. They also made clear that they were only interested in participating in the implementation of activities and not necessarily in the planning or evaluation of strategies. If these findings are relevant on a wider scale, then there is a need to reinforce the importance of the stakeholders' participation at every stage of animal health programs.

My proposed steps in planning and evaluation of animal health communication campaigns based on the combination of PRCA, PCSD and CPPE (Anyaegbunam et al., 2004; LeFevre et al., 2000; Mefalopulos and Kamlongera, 2004b) are as follows. There are specific references that detail how to conduct the three approaches (see Anyaegbunam et al., 2004; LeFevre et al., 2000; Mefalopulos and Kamlongera, 2004b).

Table 8.1 Proposed Animal Health Communication Approach

Approach steps were derived from	Steps	Stakeholders	Roles
Participatory Rural Communication Appraisal	1. Prepare and plan for the field; 2. Undertake PRCA data collection in the field; 3. Analyse and synthesise PRCA findings; 4. Prepare and conduct baseline study; and, 5. Synthesise and present PRCA and baseline study results.	• Animal Health Authorities (National, Regional, Provincial to Local) • VAHWs (Volunteers and other stakeholders and related organisations) • Grassroots Stakeholders (Farmers and traders)	• Lead the process and ensure that every step is followed and implemented. The only actor in step 1. • Act as liaison or support to both animal health authorities and grassroots stakeholders. Participation starts from step 2. • Ensure that their voice is heard and participate fully at every stage. Participation starts from step 2.
Participatory Communication Strategy Design	6. Transform field findings into useful actions;	• Animal Health Authorities (National,	• Ensure that every step is followed and implemented.

Approach steps were derived from	Steps	Stakeholders	Roles
	7. Put together the communication strategy; 8. Select communication models and approaches; 9. Develop the creative strategy; and, 10. Conduct preliminary monitoring of message and discussion themes' effectiveness.	Regional, Provincial to Local) • VAHWs (Volunteers and other stakeholders and related organisations) • Grassroots Stakeholders (Farmers and traders)	
Comprehensive Participatory Planning and Evaluation	11. Preparatory phase; 12. Conceptualisation phase; 13. Data collection phase; and, 14. Analytical phase.	• Animal Health Authorities (National, Regional, Provincial to Local) • VAHWs (Volunteers and other stakeholders and related organisations) • Grassroots Stakeholders (Farmers and traders)	

The stakeholders are divided into three main groups and their main roles in each phase are detailed in Table 8.1 Proposed Animal Health Communication Approach. This approach is meant not only to assist in finding a solution to controlling TADs but also assist in communicating about other animal health issues. It is envisaged that with this new proposed approach to communicating about TADs, animal health communication will further become a valuable tool in motivating various stakeholders to participate and be part of the solution of controlling TADs and promoting animal health. I acknowledge that this approach is intensive and requires aid. Given that each country has some capacity to implement this approach, there is a great possibility for sustainability because most of the stakeholders will be involved from the planning to the evaluation of a particular animal health program. I mentioned that grassroots stakeholders do not want to be involved prior to implementation; however, if the essential

nature and value of their participation is properly explained to them, and if they are reassured that there will be some guidance from experts, then this new approach to animal health programs may work. I also mentioned in earlier chapters that there are technical part of the campaign may not need the participation of grassroots stakeholders such as the running of the diagnostic laboratory however it is important that results are communicated in a timely manner and in the language that most stakeholders will understand.

In conclusion, while I emphasise the participation of stakeholders, I acknowledge that in animal health, a purely participatory approach, as I described in Chapter 2, is not likely or feasible because there are some components of animal health programs that are better handled by experts such as disease diagnosis. However, any component or activity that involves stakeholders must also include them from planning right through to evaluation. In the long run, ensuring that these grassroots stakeholders understand the importance of and principles behind animal health communication and animal health itself will determine whether an animal health program succeeds.

APPENDICES

APPENDIX ONE: HUMAN ETHICS PERMIT (CONDITIONAL AND OUTRIGHT APPROVAL)

Research Ethics Office
Division of Research and Development
www.murdoch.edu.au

Chancellery Building
South Street
MURDOCH WA 6150
Telephone: 9360 6677
Facsimile: 9360 6686
human.ethics@murdoch.edu.au
www.research.murdoch.edu.au/ethics

Monday, 26 May 2008

Prof John Edwards
School of Veterinary and Biomedical Science
Murdoch University

Dear John,

Permit No.	2008/076
Project Title	Animal Health Communication: Defining an Emerging Field and a Model of Practice

Your application in support of the above project, received on 29/04/2008, was reviewed by the Murdoch University Human Research Ethics Committee at a meeting held on 20th May 2008.

Decision of Human Research Ethics Committee:

APPROVED – subject to the following CONDITIONS:

(a) More detail is required on the typical practice of government authorities when accompanying researchers. Are there potential risks for participants?

(b) How will the participating groups be randomly selected? How is this selection random?

(c) Why do the focus groups need to target serological surveillance participants? Does the village leader already know the participation status? If not, is it a violation of a previous promise or confidentiality?

(d) Reconsider the possibility that participants may be identifiable in the study. How will this issue be addressed?

(e) More consideration and detail is required on the potential risks and repercussions to the farmers should their stock be detected to be diseased. For example, if an entire stock is diseased how will this affect the farmer's livelihood? Will the animals be destroyed? How will the farmer be supported or recompensed? Amend the Information Letter to advise farmers of these risks.

HREC Approval Letter 221107

CRICOS Provider Code: 00125J
ABN 61 615 369 313

Murdoch UNIVERSITY

Research Ethics Office
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Thursday, 26 June 2008

Prof John Edwards
School of Veterinary and Biomedical Science
Murdoch University

Dear John,

Permit No. 2008/076
Project Title Animal Health Communication: Defining an Emerging Field and a Model of Practice

Thank you for addressing the conditions placed on the above application to the Murdoch University Human Research Ethics Committee. On behalf of the Committee, I am pleased to advise the application now has:

OUTRIGHT APPROVAL

Permits are granted for three years. You will need to submit an annual report to the Research Ethics Office. Please note you are required to report immediately any unforeseen or adverse events especially if they might affect the ethical standing of the project. Once the project has been completed, please submit a Permit Closure Report. All forms are available on the Research Ethics web-site.

I wish you every success for your research.

Please quote your ethics permit number in all correspondence.

Kind Regards,

Dr. Erich von Dietze
Manager of Research Ethics

cc: Dr Anne Surma, Kate Fitch, Dr Subhash Morzaria
Domingo Caro

HREC Approval Letter 221107

CRICOS Provider Code: 00125J
ABN 61 615 369 313

APPENDIX TWO: GUIDE QUESTIONNAIRE FOR FARMER-TRADERS IN THE KAP SURVEY

I. Socio-Demographics

For interviewer: classify the FARMER household (ONLY) before interview.

Household category:

- ☐ Poor Income
- ☐ Middle Income
- ☐ High Income

Farming System:

- ☐ Subsistence
- ☐ Semi-Commercial
- ☐ Commercial

1. Age last birthday: ___

2. Sex:
   - ☐ Male
   - ☐ Female

3. Marital Status:
   - ☐ Single
   - ☐ Married
   - ☐ Divorce
   - ☐ Widow/er
   - ☐ Separated

4. Household size:

   No. of persons aged over 15 years of age: _____

   No. of persons aged less than 15 years of age: _____

5. Do you belong to an ethnic group
   - ☐ Yes: _____
   - ☐ No

6. Monthly income (Please modify as appropriate):
   - ☐ <US$50
   - ☐ US$100—200
   - ☐ US$201—300
   - ☐ US$301—400
   - ☐ Over US$401

7. Land ownership (please specify land size in hectares)
   - ☐ Owned, size: _____
   - ☐ Rented, size: _____
   - ☐ Shared, size: _____

8. Other properties:
   - ☐ Transport, specify:
   - ☐ TV
   - ☐ Radio
   - ☐ Others: _____

9. Highest educational level
   - ☐ Primary School
   - ☐ Secondary School
   - ☐ Tertiary School
   - ☐ Post-Graduate
   - ☐ No Education

10. What are your livestock animals? (For traders: **What do you trade/buy and sell?**)
    - ☐ Duck
    - ☐ Pigeon
    - ☐ Chicken
    - ☐ Rooster/Fighting cock
    - ☐ Pig
    - ☐ goat/sheep
    - ☐ Water buffalo
    - ☐ Cattle
    - ☐ Other animals in backyard farms: _____

11. What is the size (number of heads) of your farm? (For Traders: **How many animals do you usually buy/sell?**)

Poultry/bird	Cattle/large ruminants	pig/small ruminants
☐ 1—50	☐ 1—5	☐ 1—50
☐ 51—99	☐ 6—50	☐ 51—200
☐ 100—400	☐ 51—100	☐ 201—400
☐ 401—1000	☐ Over 100	☐ Over 400
☐ Over 1000		

12. Have you had any experience of the following in your backyard farm/during trading? (check as many as applicable)
    - ☐ CSF Outbreaks
    - ☐ FMD Outbreaks
    - ☐ HPAI Outbreaks
    - ☐ Other animal disease outbreaks
    - ☐ None

13. When was the last outbreak?
    - ☐ Last year. What month: _____
    - ☐ Last few months. Please specify: _____
    - ☐ Last month
    - ☐ Recently

14. How many animals were infected?
    - ☐ CSF Outbreaks: _____
    - ☐ FMD Outbreaks: _____
    - ☐ HPAI Outbreaks: _____
    - ☐ Other animal disease outbreaks

II. Knowledge

Please check the best answer

Transboundary Animal Diseases

1. I am aware of the following diseases:
   - ☐ Classical Swine Fever (Hog Cholera/CSF)
   - ☐ Foot and Mouth Disease (FMD)
   - ☐ Highly Pathogenic Avian Influenza (Bird flu/HPAI)
   - ☐ Others: _____

2. I know of the clinical signs of the following diseases
   - ☐ Classical Swine Fever (Hog Cholera/CSF)
   - ☐ Foot and Mouth Disease (FMD)
   - ☐ Highly Pathogenic Avian Influenza (Bird flu/HPAI)
   - ☐ Others: _____

3. I am aware of the government's programme against the following diseases
   - ☐ Classical Swine Fever (Hog Cholera/CSF)
   - ☐ Foot and Mouth Disease (FMD)
   - ☐ Highly Pathogenic Avian Influenza (Bird flu/HPAI)
   - ☐ Others: _____

4. CSF could be transmitted through direct contact between animals
   ☐ Yes ☐ No

5. CSF can be spread by livestock traders, veterinarians or farm visitors
   ☐ Yes ☐ No

6. CSF is transmitted through direct contact between animals, indirect contact through premises
   ☐ Yes ☐ No

7. Insufficiently cooked waste food fed to pigs cannot transmit CSF
   ☐ Yes ☐ No

8. Clinical signs of CSF include (check as many applicable answers possible):
   - ☐ Fever (41^{o}C), anorexia, lethargy
   - ☐ Occasional vomiting
   - ☐ Lesions

9. Following are other clinical signs of CSF
   - ☐ Infant mortality
   - ☐ Diarrhoea
   - ☐ Hyperactive

10. Ways of preventing CSF include (check as many applicable answers possible):
    - ☐ Report cases to animal health authorities
    - ☐ Vaccination
    - ☐ Sell infected animal
    - ☐ Slaughter and eat animal

11. Ways of controlling CSF include (check as many applicable answers possible):
    - ☐ Report cases to animal health authorities
    - ☐ Vaccination
    - ☐ Sell infected animal
    - ☐ Slaughter and eat animal

12. FMD could be transmitted through direct contact between animals
    ☐ Yes ☐ No

13. FMD can be spread by livestock traders, veterinarians or farm visitors
    ☐ Yes ☐ No

14. FMD is transmitted through direct contact between animals, indirect contact through premises
    ☐ Yes ☐ No

15. Insufficiently cooked waste food fed to pigs cannot transmit FMD
    ☐ Yes ☐ No

16. FMD is a disease among
    ☐ Cattle/Water buffaloes
    ☐ Pigs
    ☐ Sheep and Goat
    ☐ Dogs/Cats
    ☐ Duck/chicken

17. Clinical signs of FMD include (check as many applicable answers possible):
    ☐ Fever (41^{o}C), anorexia, lethargy
    ☐ Occasional vomiting
    ☐ Lesions

18. Following are other clinical signs of FMD
    ☐ Infant mortality
    ☐ Vesicles
    ☐ Diarrhoea

19. Ways of preventing FMD include (check as many applicable answers possible):
    ☐ Report cases to animal health authorities
    ☐ Vaccination
    ☐ Sell infected animal
    ☐ Slaughter and eat animal

20. Ways of controlling FMD include:
    ☐ Report cases to animal health authorities
    ☐ Vaccination
    ☐ Sell infected animal
    ☐ Slaughter and eat animal

21. HPAI could be transmitted through direct contact between animals
    ☐ Yes ☐ No

22. HPAI can be spread by livestock traders, veterinarians or farm visitors
    ☐ Yes ☐ No

23. Do you know how HPAI is transmitted?
    ☐ Yes ☐ No

24. HPAI is transmitted through direct contact between animals, indirect contact through premises
    ☐ Yes ☐ No

25. Sufficiently cooked poultry and egg for food would not infect humans with HPAI
    ☐ Yes ☐ No

26. HPAI infects
    - ☐ Goat
    - ☐ Dogs
    - ☐ Pigs
    - ☐ Cattle
    - ☐ Birds
    - ☐ Poultry
    - ☐ Pigeon

27. Clinical signs of HPAI include (check as many applicable answers possible):
    - ☐ Depression
    - ☐ Decline in production
    - ☐ Death
    - ☐ Lesions

28. Following are other clinical signs of HPAI
    - ☐ Infant mortality
    - ☐ Diarrhoea
    - ☐ Hyperactive

29. Ways of preventing HPAI include (check as many applicable answers possible):
    - ☐ Report cases to animal health authorities
    - ☐ Vaccination
    - ☐ Sell infected animal
    - ☐ Slaughter and eat animal

30. Ways of controlling HPAI include (check as many applicable answers possible):
    - ☐ Report cases to animal health authorities
    - ☐ Vaccination
    - ☐ Sell infected animal
    - ☐ Slaughter and eat animal

31. Biosecurity to me means:
    - ☐ Visiting a farm per day
    - ☐ Cleaning and disinfection of the farm area
    - ☐ Washing my hands after tending to animals
    - ☐ Visiting farms everyday

III. Attitude

Comment on the following statements

1. Biosecurity in the farm/during trading would help prevent animal diseases.
   ☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

2. Vaccination helps in the prevention of animal diseases.
   ☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

3. What do you think is the most effective way of preventing the spread of animal diseases?
    - ☐ Promptly notify the village animal health worker when my animals are sick
    - ☐ Knowledge of disease situation in my village and neighboring village/s
    - ☐ Regular cleaning and disinfection of animal premises
    - ☐ Provide housing for my animals to prevent exposure to diseases
    - ☐ Avoid contaminated sources of feed and water
    - ☐ Vaccination

☐ Buy animal stocks from a reputable farm/trader
☐ Isolation and quarantine of new arrivals
☐ Don't allow people or animals to come in contact with animals
☐ Follow measures for safe movement of livestock to minimize risk of disease spread

4. Regular cleaning and disinfection helps prevent animal diseases
☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

Classical Swine Fever (CSF)

1. CSF needs to be controlled and eradicated
☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

2. Cleaning and disinfection would help in controlling and eradicating CSF
☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

3. The government CSF Programme is effective
☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

4. Biosecurity can help in preventing CSF
☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

5. There is no urgent need in controlling and eradicating CSF
☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

6. I would volunteer my animal for free in any government blood collection campaign.
☐ Yes ☐ No

Why? _____

7. I would join the campaign against HPAI.
☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

How? _____

Foot and Mouth Disease

1. FMD needs to be controlled and eradicated
☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

2. Cleaning and disinfection would help in controlling and eradicating FMD
☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

3. The government FMD Programme is effective
☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

4. Biosecurity can help in preventing FMD
   ☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

5. There is no urgent need in controlling and eradicating FMD
   ☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

6. I would volunteer my animal for free in any government blood collection campaign
   ☐ Yes ☐ No

   Why? _____

7. I would join the campaign against FMD
   ☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

   How? _____

Highly Pathogenic Avian Influenza

1. HPAI needs to be controlled and eradicated
   ☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

2. Cleaning and disinfection would help in controlling and eradicating HPAI
   ☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

3. The government HPAI Programme is effective
   ☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

4. Biosecurity can help in preventing HPAI
   ☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

5. There is no urgent need in controlling and eradicating HPAI
   ☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

6. I would volunteer my animal for free in any government blood collection campaign
   ☐ Yes ☐ No

   Why? _____

7. I would join the campaign against HPAI
   ☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

   How? _____

IV. Practice

1. What is the first thing you do whenever outbreaks occur in your farm/during transport?
   - ☐ Report to animal health authorities
   - ☐ Treat the animal myself
   - ☐ Slaughter the animals right away
   - ☐ Sell the animal
   - ☐ Observe the animal
   - ☐ Nothing

2. When your animals get sick, how much do you pay on average for treatment?
   _____

3. (FOR FARMERS ONLY) How do you keep your animals?
   - ☐ Caged
   - ☐ Roaming freely
   - ☐ Tied
   - ☐ Others, please specify: _____

4. (FOR TRADERS ONLY) How do you keep your animals during transport?
   - ☐ Mixed
   - ☐ Caged separately but near each other
   - ☐ I transport one animal at a time
   - ☐ Others, please specify: _____

5. Do you keep your animals together?
   ☐ Yes ☐ No

6. Do you maintain a footbath at the entry of your farm/house?
   ☐ Yes ☐ No

7. Do you vaccinate your animals against diseases?
   ☐ Yes ☐ No

   Why? _____

8. Do you clean and disinfect your animal's pen/vehicle regularly?
   - ☐ Always
   - ☐ Usually
   - ☐ Occasionally
   - ☐ Hardly never
   - ☐ Never
   - ☐ Not applicable: (Reason) _____

9. Where do you purchase your animal?
   - ☐ From livestock traders
   - ☐ From Livestock Auction Market
   - ☐ Wet markets
   - ☐ Others: _____

10. What's the use of your poultry?
    - ☐ Income purposes
    - ☐ For household use
    - ☐ Help in agricultural work
    - ☐ Local consumption/Food source for my family
    - ☐ Pet/recreational

11. What's the use of your livestock/large animals (swine and cattle)?
    - ☐ Income purposes
    - ☐ For household use
    - ☐ Help in agricultural work
    - ☐ Local consumption/Food source for my family
    - ☐ Pet/recreational

12. How do you consume your animal? Or what do you do with your animal stocks?
    - ☐ Sell to traders
    - ☐ Slaughter for food
    - ☐ Sell to market
    - ☐ Slaughter and sell meat
    - ☐ Breed
    - ☐ Recreational
    - ☐ Local consumption
    - ☐ Others: _____

13. Do you sell your cattle?
    - ☐ Never sell except for emergency. Specify what emergency: _____
    - ☐ Sell irregularly/occasionally when cash is needed
    - ☐ Yes as part of income

14. Do you sell your Pigs?
    - ☐ Never sell except for emergency. Specify what emergency: _____
    - ☐ Sell irregularly/occasionally when cash is needed
    - ☐ Yes as part of income

15. Do you sell your poultry/chicken?
    - ☐ Never sell except for emergency. Specify what emergency: _____
    - ☐ Sell irregularly/occasionally when cash is needed
    - ☐ Yes as part of income

16. What do you do when you observe that your animal is sick?
    - □ Sell to market
    - □ Slaughter and cook
    - □ Slaughter and sell the meat
    - □ Sell to traders
    - □ Report to animal health workers
    - □ Others: _____

V. Communication

1. Where do you usually get news on animal health diseases (CSF, FMD and HPAI)?
    - ☐ National Radio
    - ☐ Local Radio
    - ☐ Community Radio
    - ☐ TV
    - ☐ Newspaper
    - ☐ Posters
    - ☐ Leaflet
    - ☐ Billboard
    - ☐ Public announcement
    - ☐ Public fora
    - ☐ Community (word of mouth)
    - ☐ Animal Health Worker
    - ☐ Others: _____

2. How often do you get/subscribe to news?
   - ☐ Everyday/Always
   - ☐ Once/twice a week
   - ☐ Hardly never
   - ☐ Never

3. How long do you spend on listening to the radio?
   - ☐ 1-2 hours a day
   - ☐ >2 to 6 hours a day
   - ☐ >6 to 12 hours a day
   - ☐ Hardly never
   - ☐ Never

4. How long do you spend watching TV?
   - ☐ 1-2 hours a day
   - ☐ >2 to 6 hours a day

APPENDIX THREE: GUIDE QUESTIONNAIRE FOR VAHWS IN THE KAP SURVEY

I. Socio-Demographics

a. Age last birthday: ___

b. Sex:
   i. Male
   ii. Female

c. Marital Status:
   i. Single
   ii. Married
   iii. Divorce
   iv. Widow/er
   v. Separated

d. Monthly income:
   i. <US$50
   ii. US$100—200
   iii. US$201—300
   iv. US$301—400
   v. Over US$401

e. Highest educational level
   i. Primary School
   ii. Secondary School
   iii. Tertiary School
   iv. Post-Graduate
   v. No Education

f. Have you encountered any of the following animal diseases during your tenure as animal health worker? (check as many as applicable)
   i. CSF Outbreaks
   ii. FMD Outbreaks
   iii. HPAI Outbreaks
   iv. Other animal disease outbreaks: Specify: _____
   v. None

II. Knowledge

Please check the best answer

Transboundary Animal Diseases

32. I am aware of the following diseases

   ☐ Classical Swine Fever (Hog Cholera/CSF)
   ☐ Foot and Mouth Disease (FMD)
   ☐ Highly Pathogenic Avian Influenza (Bird flu/HPAI)
   ☐ Others: _____

33. I know of the clinical signs of the following diseases

- ☐ Classical Swine Fever (Hog Cholera/CSF)
- ☐ Foot and Mouth Disease (FMD)
- ☐ Highly Pathogenic Avian Influenza (Bird flu/HPAI)
- ☐ Others: _____

34. I am aware of the government's programme against the following diseases

    - ☐ Classical Swine Fever (Hog Cholera/CSF)
    - ☐ Foot and Mouth Disease (FMD)
    - ☐ Highly Pathogenic Avian Influenza (Bird flu/HPAI)
    - ☐ Others: _____

35. CSF could be transmitted through direct contact between animals

    ☐ Yes ☐ No

36. CSF can be spread by livestock traders, veterinarians or farm visitors

    ☐ Yes ☐ No

37. CSF is transmitted through direct contact between animals, indirect contact through premises

    ☐ Yes ☐ No

38. Insufficiently cooked waste food fed to pigs cannot transmit CSF

    ☐ Yes ☐ No

39. Clinical signs of CSF include (check as many applicable answers possible):
    - ☐ Fever (41°C), anorexia, lethargy
    - ☐ Occasional vomiting
    - ☐ Lesions

40. Following are other clinical signs of CSF
    - ☐ Infant mortality
    - ☐ Diarrhoea
    - ☐ Hyperactive

41. Ways of preventing CSF include (check as many applicable answers possible):
    - ☐ Report cases to animal health authorities
    - ☐ Vaccination
    - ☐ Sell infected animal
    - ☐ Slaughter and eat animal

42. Ways of controlling CSF include (check as many applicable answers possible):
    - ☐ Report cases to animal health authorities
    - ☐ Vaccination
    - ☐ Sell infected animal
    - ☐ Slaughter and eat animal

43. FMD could be transmitted through direct contact between animals

☐ Yes ☐ No

44. FMD can be spread by livestock traders, veterinarians or farm visitors

☐ Yes ☐ No

45. FMD is transmitted through direct contact between animals, indirect contact through premises

☐ Yes ☐ No

46. Insufficiently cooked waste food fed to pigs cannot transmit FMD

☐ Yes ☐ No

47. FMD is a disease among
    - ☐ Cattle/Water buffaloes
    - ☐ Pigs
    - ☐ Sheep and Goat
    - ☐ Dogs/Cats
    - ☐ Duck/chicken

48. Clinical signs of FMD include (check as many applicable answers possible):
    - ☐ Fever (41°C), anorexia, lethargy
    - ☐ Occasional vomiting
    - ☐ Lesions

49. Following are other clinical signs of FMD
    - ☐ Infant mortality
    - ☐ Vesicles
    - ☐ Diarrhoea

50. Ways of preventing FMD include (check as many applicable answers possible):
    - ☐ Report cases to animal health authorities
    - ☐ Vaccination
    - ☐ Sell infected animal
    - ☐ Slaughter and eat animal

51. Ways of controlling FMD include:
    - ☐ Report cases to animal health authorities
    - ☐ Vaccination
    - ☐ Sell infected animal
    - ☐ Slaughter and eat animal

52. HPAI could be transmitted through direct contact between animals

☐ Yes ☐ No

53. HPAI can be spread by livestock traders, veterinarians or farm visitors

☐ Yes ☐ No

54. Do you know how HPAI is transmitted?

☐ Yes ☐ No

55. HPAI is transmitted through direct contact between animals, indirect contact through premises

☐ Yes ☐ No

56. Sufficiently cooked poultry and egg for food would not infect humans with HPAI

☐ Yes ☐ No

57. HPAI infects
    - ☐ Goat
    - ☐ Dogs
    - ☐ Pigs
    - ☐ Cattle
    - ☐ Birds
    - ☐ Poultry
    - ☐ Pigeon

58. Clinical signs of HPAI include (check as many applicable answers possible):
    - ☐ Depression
    - ☐ Decline in production
    - ☐ Death
    - ☐ Lesions

59. Following are other clinical signs of HPAI
    - ☐ Infant mortality
    - ☐ Diarrhoea
    - ☐ Hyperactive

60. Ways of preventing HPAI include (check as many applicable answers possible):
    - ☐ Report cases to animal health authorities
    - ☐ Vaccination
    - ☐ Sell infected animal
    - ☐ Slaughter and eat animal

61. Ways of controlling HPAI include (check as many applicable answers possible):
    - ☐ Report cases to animal health authorities
    - ☐ Vaccination
    - ☐ Sell infected animal
    - ☐ Slaughter and eat animal

62. Biosecurity to me means:
    - ☐ Visiting a farm per day
    - ☐ Cleaning and disinfection of the farm area
    - ☐ Washing my hands after tending to animals
    - ☐ Visiting farms everyday

III. Attitude

Classical Swine Fever (CSF)

8. CSF needs to be controlled and eradicated

☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

9. Cleaning and disinfection would help in controlling and eradicating CSF

☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

10. The government CSF Programme is effective

☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

11. Biosecurity can help in preventing CSF

☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

12. There is no urgent need in controlling and eradicating CSF

☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

Foot and Mouth Disease

8. FMD needs to be controlled and eradicated

☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

9. Cleaning and disinfection would help in controlling and eradicating FMD

☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

10. The government FMD Programme is effective

☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

11. Biosecurity can help in preventing FMD

☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

12. There is no urgent need in controlling and eradicating FMD

☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

Highly Pathogenic Avian Influenza

8. HPAI needs to be controlled and eradicated

☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

9. Cleaning and disinfection would help in controlling and eradicating HPAI

☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

10. The government HPAI Programme is effective

☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

11. Biosecurity can help in preventing HPAI

☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

12. There is no urgent need in controlling and eradicating HPAI

☐ Strongly Agree ☐ Agree ☐ No Comment ☐ Disagree ☐ Strongly disagree

IV. Practice

17. What is the first thing you do whenever outbreaks occur in your area?
    - ☐ Report to animal health authorities
    - ☐ Treat the animals myself
    - ☐ Advice farmers to sell the animal
    - ☐ Observe the animal
    - ☐ Nothing

18. Do you encourage farmers/clients/traders to clean and disinfect regularly?

☐ Yes ☐ No

Why? _____

19. Do you encourage farmers/clients/traders to vaccinate?

☐ Yes ☐ No

Why? _____

20. Where do you usually get news on animal health diseases (CSF, FMD and HPAI)?
    - □ National Radio
    - □ Local Radio
    - □ Community Radio
    - □ TV
    - □ Newspaper

- □ Posters
- □ Leaflet
- □ Billboard
- □ Public announcement
- □ Public fora
- □ Community (word of mouth)

21. How often do you get/subscribe to news?
    - □ Everyday/Always
    - □ Once/twice a week
    - □ Hardly never
    - □ Never

22. How long do you spend on listening to the radio?
    - □ 1-2 hours a day
    - □ >2 to 6 hours a day
    - □ >6 to 12 hours a day
    - □ Hardly never
    - □ Never

23. How long do you spend watching TV?
    - □ 1-2 hours a day
    - □ >2 to 6 hours a day

APPENDIX FOUR: GUIDE QUESTIONNAIRE FOR KEY INFORMANT INTERVIEW IN THE EXPLORATORY FIELD STUDY

1. Describe the animal health policy of your government.
2. Describe the government's policy on animal movement. (Within the country and international)
3. Describe how animal health programmes are implemented.
4. Describe the participation of grassroots farmers in the planning of animal health programmes.
5. What portion of the national budget is allocated to livestock programmes?
6. Is there any fund allocation for animal health communication? If so, what proportion of the total livestock fund is allocated to AHC? If none, describe how the government implement AHC activities and what item in the total budget is the funding usually sourced.
7. Is there any feedback mechanism on the delivery of services?
8. Where do animal health officers/workers get their training on animal health services?
9. Who (country, group, affiliations) usually deliver or give training on animal health services such as animal movement management, laboratory management?
10. What are the priority diseases in the country?
11. Describe the factors that you believe contribute to the spread of this disease.
12. Describe the animal movement management among the GMS countries.
13. Is there any communication campaign related to animal movement currently?
14. Describe the main campaign themes/objectives for FMD, CSF and HPAI.
15. Is there a dedicated animal health communication unit within the ministry/department?
16. Describe how your office works with the AHC unit.
17. Is there any evaluation mechanism concerning AHC? If there is, describe how refinements are introduced. If there is none, are campaigns monitored in anyway?
18. Given a scenario when a disease outbreak of HPAI, CSF and FMD occurred, describe the order of priority in terms of animal movement management in the country. Why will you prioritize it as such?

APPENDIX FIVE: THEME GUIDE FOR THE TRANSECT WALK IN THE EXPLORATORY FIELD STUDY

A cross-section of the village's population will be invited to participate in the transect walk. These participants will be male and female and will come from different socio-economic background of the village. The participants will be briefed that the activity is undertaken to have a better understanding of controlling TADs in their village.

1. Road connections that are instrumental in livestock movement
2. Main crops of the village
3. Grazing areas
4. Trading areas
5. Livestock system
6. Livestock species
7. Communal water sources
8. Crop-animal interactions
9. Traders
10. Village animal health workers
11. Veterinarians
12. Livestock or auction Market
13. Slaughter houses

APPENDIX SIX: GUIDE QUESTIONS FOR THE FARMERS' FGD IN THE EXPLORATORY FIELD STUDY

1. Describe the trading practice of your household.
2. What are the species of livestock that you keep?
3. How many animals do you keep?
4. What is the main use of these livestock?
5. Do you keep any poultry?
6. What are the species of these poultry?
7. How many do you keep?
8. Why do you keep these poultry?
9. Describe the responsibility of each household member in keeping the livestock and poultry.
10. Who has the key role in managing the livestock and poultry?
11. Do you usually trade these livestock and poultry?
12. Describe how you usually trade/transport these animals.
13. Describe what you do when you buy a new animal.
14. Describe the animal diseases that you usually encounter in your backyard.
15. Describe how you manage these diseases. (find any difference between practice and what is recommended by the government/animal health authorities)
16. Describe the time when you usually experience a certain animal disease.
17. How do these diseases affect you?
18. Describe how you receive livestock treatment services from the government.
19. Describe how you get information on animal diseases.
20. Have you ever received training in managing animal diseases?
21. How do you feel about these trainings?
22. Do you practice anything that you have learned from these trainings?
23. Describe your most common source of information on animal diseases.
24. Describe your satisfaction with the government's livestock services.
25. In specific campaigns in FMD, CSF or HPAI, are you able to comply with what each disease's communication campaigns objectives such as report (cite main campaign

objectives for each disease in the country), separate, recognize, etc.? What is your motivation for (not) complying with the campaign objective?

26. Between a call to separate animals for HPAI and keep your new animals for a few days for FMD, which will you prioritize to follow? Why?

APPENDIX SEVEN: GUIDE QUESTIONS FOR THE TRADERS' FGD IN THE EXPLORATORY FIELD STUDY

1. Describe your main source of household income.
2. Describe your trade practice.
3. Can you tell us about any government policy on animal movement management that you know?
4. What animals do you usually trade?
5. How often do you usually trade livestock/poultry?
6. Where do you usually buy your animals?
7. Where do you usually sell them?
8. Describe the diseases that you have encountered during buying/selling your animals.
9. Describe how you manage these diseases.
10. Where do you suspect the animals got the disease? What makes you say that?
11. Describe the training that you receive from the government concerning animal movement, diseases and management.
12. Are you able to practice the training that you have received? Why or why not?
13. Describe the international livestock movement policy that you know.
14. How do you think animal movement should be managed in the country? In the Region?
15. Describe where you usually get information on animal health issues.
16. In specific campaigns in FMD, CSF or HPAI, are you able to comply with what each disease's communication campaigns objectives such as report (cite main campaign objectives for each disease in the country), separate, recognize, etc.? What is your motivation for (not) complying with the campaign objective?
17. Between a call to separate animals for HPAI and keep your new animals for a few days for FMD, which will you prioritize to follow? Why?

APPENDIX EIGHT: GUIDE QUESTIONNAIRE FOR FARMERS AND TRADERS IN THE MAIN FIELD STUDY

1. Sources of information

General sources of information

Topic Focus	Core Questions	Prompts and expansion Materials
Main sources of information Most frequently used and most important sources Criteria for trusting information source	• How do farmers/traders usually find information on animal health? • How often do they seek animal health information? Why? • Is there any difference in information sources between men and women? • Describe a trust-worthy information source.	• Role of media—posters, billboards, magazine, radio • Key players—village animal health worker, local executives • Variation between gender • From the government, perceived knowledge in animal health issues

Community/village

Topic Focus	Core Questions	Prompts and expansion Materials
Talk about animal health in the community Role of animal health worker	For men and women • What usual animal health topics are discussed in the community? • Does this talk tend to happen with men or women or specific sector of the community/village • Under what circumstance does this talk happen? • How often does this kind of talk happen? • Describe the role of the village animal health worker in the community. • How do you engage your local VAHW/VVW?	• Key players—village animal health worker, local executive • Sector variation—farmers, traders • Casually, not often • During emergencies • Animal health problems

2. Animal Health Services

Knowledge of services

Topic Focus	Core Questions	Prompts and expansion Materials
Awareness of services	• Describe your awareness of animal health services available to you or your village? • Please describe the animal health services that you receive.	• Vaccination, treatment of disease • Per veterinarian's recommendations, treatments

	• What animal health service do you avail of almost regularly? • Describe your awareness of vaccination.	

Use of services

Topic Focus	Core Questions	Prompts and expansion Materials
	• Why do you avail of animal health services? • How and how often do you avail of the services?	• During emergencies, regular animal health check-up • Only when needed, as much as possible

Impression of services

Topic Focus	Core Questions	Prompts and expansion Materials
Impressions	• What is the most important aspect of the animal health services in your village? • Who do you think should provide animal health services? Why? • How do you think animal health services should be delivered? Do you believe that you could contribute to strategies implemented? • What do you think of the information drive of the animal health services? • Describe how vaccination affects your animal health? • Describe your opinion on vaccination as an animal disease control strategy.	• Vaccination service, vitamins distribution, animal health advice • Veterinarians only, village animal health workers • Possibility of participatory approach in animal health programmes • Satisfactory, non-existent

3. Animal health

Risk perception

Topic Focus	Core Questions	Prompts and expansion Materials
Risk taking	• What are the risks that you think threaten your animal's health? • Describe the possible animal disease risk sources. • How much risk do you think you or others usually take?	• Property, part of family

Risk prevention

Topic Focus	Core Questions	Prompts and expansion Materials
Risk prevention	• Who should be responsible for animal health? • How do you prevent animal diseases?	• Government or farmer or trader • Cost of establishing risk strategies

	• Where did you learn about these strategies? • Describe the influences in establishing risk prevention strategies. • Describe your perception on vaccination as a means of disease risk prevention.	

Attitude toward animal health

Topic Focus	Core Questions	Prompts and expansion Materials
Value	• How do you value animals? • How important is the health of your animal? • How do you maintain the health of your animals?	• Property, part of family

Uses of animals

Topic Focus	Core Questions	Prompts and expansion Materials
Use	• What are the uses of animals?	• Agricultural help, pet, additional food source

4. Motivation

Prompts to follow animal health messages

Topic Focus	Core Questions	Prompts and expansion Materials
	• How do you feel about the animal health messages that you get from various media? • How do you think will you respond to the messages presented? • Describe the factors that will affect your decision in following the animal health messages? • Describe your attitude towards vaccination?	• Connection to the message

Prompts to follow public health messages

Topic Focus	Core Questions	Prompts and expansion Materials
	• How do you feel about the animal health messages that you get from various media? • How do you think will you respond to the messages presented? • Describe the factors that will affect your decision in following the health messages?	

APPENDIX NINE: ORAL CONSENT GUIDE

The verbal consent inquiry was based on this original form. I was advised not to ask the study participants to sign anything as most would not be able to read and it was culturally inappropriate for me to ask them to sign anything.

The information about this study has been given to me. I have received satisfactory answers to all questions I have asked. I agree to be interviewed for/participate in this study. I know that I can choose not to answer any question, or stop at any time. I understand that all information provided by me is treated as confidential and will not be released by the researcher to a third party unless required to do so by law.

☐ I am happy for this interview to be audio taped.

☐ I am not willing for this interview to be audio taped.

☐ I am happy for this interview to be video taped.

☐ I am not willing for this interview to be video taped.

☐ I am happy for my name / role to be used in any publications arising out of this study.

☐ I am not willing for my name / role to be used in any publications arising out of this study.

☐ I would like to receive a copy of any comments attributed to me for verification / or amendment

☐ I am happy for my comments to be used without being contacted again.

☐ I would like to receive a copy of the feedback from the study. Please contact me at _____

Participant: _____Date: _____ / _____ / _____

Investigator _____Date: _____ / _____ / _____

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